

**The Significance of Sociocognitive Abilities with Regards to
Overt and Relational Aggression on Perceived Popularity
Among Kindergarten Children**

Tine Aatangen



Master in Health and Social Psychology

Department of Psychology

THE UNIVERSITY OF OSLO

May 2011

Author Note

First and foremost, I would like to say a big thank you to my supervisor Anne Inger Helmen Borge who gave me the privilege of being a part of *The Matter of the First Friendship* project. Your enthusiasm and energy towards the field of developmental psychology, and the project in particular, has been a source of motivation throughout the research process. Thank you for encouraging independent thought and believing in me, especially towards the end when the study seemed overwhelming. Your guidance with respect to structure and focus has been indispensable.

I am also greatly thankful towards Knut Inge Fostervold for thorough methodological and statistical assistance. Your availability, flexibility, patience and reassurance have made this a knowledgeable process that further has strengthened my interest in the field of research.

Last but not least, I am ever grateful to my fiancé, family and friends that have supported me through the ups and downs, and been understanding with respect to my prioritization of time the past few months.

Oslo, 02.05.2011

Tine Aatangen

Abstract

Author: Tine Aatangen

Title: The Significance of Sociocognitive Abilities with Regards to Overt and Relational Aggression on Perceived Popularity among Kindergarten Children

Supervisor: Anne Inger Helmen Borge

Co-supervisor: Knut Inge Fostervold

This study investigated whether aggressive behavior had any impact on the peer status among kindergarten children aged 2-6 years within a normal population, and to what extent the presumed underlying mechanisms of language, Theory of Mind (ToM), and prosocial skills uniquely contributed to this association. Developmental and gender effects were tested for. Whereas overt aggression was defined as direct physical or verbal acts of disruption, relational aggression referred to more subtle hostility by means of strategically manipulating one's social network. Previous research has indicated a negative correlation between perceived popularity and overt aggression, and a positive correlation regarding perceived popularity and relational aggression. The present research is a sub-study of the project "The Matter of the First Friendship". It explored both combined and separate measures from the children (N=559), parents (N=559), and teachers (N=468) within the first (T1) out of four (T4) data collections. The analyses were conducted by means of Pearson's bivariate correlation analyses and path-analyses built upon multiple regression analyses. Results clarified that the combined informant approach suppressed essential effects within the perceived popularity-aggression model and that separate measures necessarily must be considered. None of the informants reported a direct effect between aggression and peer status, but prosocial skills were shown to have positive indirect effects on both relational aggression and perceived popularity from the children's perspective, and a negative indirect effect on overt aggression from the adults' perspectives. Language and ToM were found to contribute little to the perceived popularity-aggression linkage. Interpretations and implications of the findings were discussed.

Introduction	1
Friendships with Peers	2
Sociocognitive development	2
Types of Friendship Relations among Children	3
Best friendship	3
Popularity.....	4
Perceived Popularity Unpacked.....	6
Types of aggression	6
Why Do Children Aggress?.....	8
Evolutionary psychological perspective	8
Cognitive-ecological model of aggression.....	9
The acquirement of normative standards	9
Reinforcement.....	10
Potential Moderating Factors between Perceived Popularity and Aggression.....	11
Developmental effects.....	11
Gender effects	12
Research Purpose.....	13
Method.....	16
Participants	16
Procedure	16
Child interviews	16
Questionnaires to the parents and the teachers	17
Popularity Measures	18
The Bus Trip	18
Aggression Measures.....	19
Aggression assessed by the means of peer nominations.....	19
Aggression assessed by the parents and the teachers.....	20
Prosocial Skills Measures.....	21
Prosocial skills assessed by means of peer nominations.....	21
Prosocial skills assessed by the parents and the teachers.....	22
Theory of Mind (ToM) Measures.....	22
ToM ability assessed by means of peer nominations.....	22
Language Measures	23

Expressive language assessed by the parents and the teachers	23
Additional variables.....	24
Preliminary analysis	24
Linearity, homoscedasticity, normality, and multicollinearity	25
Results	26
Combined Informant Approach.....	27
Results from the correlation matrix	27
Results from the path-analysis	29
Direct effects regarding the perceived popularity-aggression model	30
Interaction effects regarding the perceived popularity-aggression model	31
Summary of the analyses	32
Multiple Informant Approach.....	33
Results from the correlation matrix	33
Results from the path-analyses	35
Summary of the analyses	39
Discussion	40
Why Is the Direct Relation between Aggression and Perceived Popularity Insignificant? .	40
The essence of prosocial skills.....	40
Language and ToM	43
Age	44
Gender.....	44
Additional factors.....	45
Surprising Results.....	46
Why Believe in the Findings?	47
Limitations and Future Directives	47
Sample and generalizability	47
Measurement and construct validity	48
Implications	49
Conclusion.....	51
References	52

Introduction

Social acceptance and a sense of belonging are essential with regards to succeeding behavioral, social, cognitive and emotional adjustment starting from an early age. Decades of research illustrate significant correlations between aggression and a host of developmental difficulties, such as peer rejection and neglect (e.g. Newcomb, Bukowski, & Pattee, 1993). Nevertheless, studies suggest that certain aggressive children are perceived as popular by peers (LaFontana & Cillessen, 2002; Dodge, Pettit, McClaskey, & Brown, 1986; Newcomb et al., 1993; Cillessen & Mayeux, 2004). This has commonly been associated with the advanced sociocognitive ability of strategic manipulation through balancing disruptive acts with prosocial skills, reflecting a proactive aggression style (Little, Jones, Henrich, & Hawley, 2003; Cook, Williams, Guerra, Kim, & Sadek, 2010; Rose & Swenson, 2009; Bukowski, 2003; Crick & Grotpeter, 1995; Crick & Grotpeter, 1996; Salmivalli & Nieminen, 2002). It is yet indistinct whether the perceived popularity-aggression linkage can be ascribed normative developmental effects, or whether it may be rooted in underlying individual diversities.

This study has investigated the perceived popularity-aggression phenomenon within a normal population. In order to identify the specific disruptive traits in question, the concept of aggression was separated into the two similar yet diverse notions of overt and relational aggression. Overt aggression resembles direct physical or verbal acts of disruption, including pushing, hitting, insulting, and threatening to beat up peers in response to actual or perceived challenges. Contrary, relational aggression refers to more refined and discrete hostility such as excluding, ignoring, threatening to end a friendship, and spreading rumors by means of one's social network (Crick & Grotpeter, 1996; Lagerspetz, Björkqvist, & Peltonen, 1988).

The aim of this study was to clarify if any of the two types of aggression were associated with perceived popularity within the peer group, and importantly, to what extent the presumed underlying mechanisms of language, Theory of Mind (ToM), and prosocial skills uniquely contributed to this correlation. Developmental and gender effects were tested for.

In contrast to previous research that typically have investigated older children and teenagers, this study examined kindergarten children aged 2-6 years. Significantly, both combined and separate measures from the children, parents, and teachers were included. These procedures created an opportunity for studying the development of aggression and peer status at an early age, and essentially, determine the underlying meaning placed upon the perceived popularity-aggression linkage by diverse informants.

Friendships with Peers

The number of social relations that children experience increases significantly with entry into kindergarten. Here, children are provided with a specter of same-aged peers and are given the opportunity to freely choose whom they want to mingle with and include in their closest circle, as opposed to the given composition of the family structure (Borge & Natvig, 2008). Løkken (2000) argues that children as young as 1-2 years are “doing childhood”, by which they create meaningful and valuable bonds with one another that significantly differs from those found between children and adults. Specifically, she establishes that “toddlers” are capable of understanding each other’s intentions and meanings through interactions in activities and play. In contrast to older children, “toddlers” are believed to communicate and connect with each other through non-verbal means, such as body language and gestures (Løkken, 2000; Michelsen, 2004; Johansson, 1999), including humor, laughter, and joy (Greve, 2009). This highlights how relations between same-aged peers are an essential supplement to that of adults’ associations with children, and hence, must not be undervalued. Hartup (2009) so excellently stated that: “peers are necessities, not luxuries in human development” (p. 3).

Sociocognitive development. The early relations that children form with peers are the springboard to a range of important experiences, including social and cognitive development. Research demonstrates that social competence typically comprises the elements of prosocial skills, empathy, sympathy, and moral reasoning. This suggests that social competence may be regarded as one’s capacity to achieve social goals (LaFontana & Cillessen, 2002), such as acceptance and enhanced peer status.

Altruistic characteristics may be found among very young children. For instance, Greve (2009) revealed that helping was evident among 2 year-olds by that they wished to help each other in the form of fetching things, helping to get dressed/undressed, and helping to solve a puzzle, among others. Similarly, Whaley and Rubenstein (1994) suggest that friendship among 3-5 year olds comprises the five dimensions of helping, intimacy, loyalty, sharing, and similarity.

Essentially, research commonly illustrates that empathy and sympathy induces prosocial behaviors such as helping (Batson, Sager, Garst, Kang, Rubchinsky, & Dawson, 1997; Batson, 2010; Eisenberg, 2010; Vaish, Carpenter, & Tomasello, 2009; Eisenberg, 1991), which in turn, stem from age-related perspective taking abilities (Vaish et al., 2009; Eisenberg, Shea, Carlo, & Knight, 1991; Eisenberg, 1991; Hoffman, 1984; Underwood &

Moore, 1982). Underwood and Moore's meta-analysis (1982) revealed a modest, but highly significant positive correlation between perspective taking and prosocial behavior, suggesting that children necessarily must understand their peers' lived worlds in order to obtain altruistic skills. This reflects Piaget's (1973) idea that children are active agents in their own development, as opposed to passive bystanders. Specifically, he proposes that children advance their communication skills and capacities to understand the perspectives of others through interactions with same-aged peers, which furthermore positively influence their cognitive development.

Types of Friendship Relations among Children

Peer relations are typically divided into the three categories of best friendship, popularity, and victimization, respectively. Research indicates that both best friendship and popularity are crucial for children's development, however, the functioning or "provisions" provided by the two relations are somewhat different. Accordingly, the adaptive significance of the type of relationship varies depending on the adjustment outcome examined (Ladd, Kochenderfer, & Coleman, 1997).

Best friendship. Best friendship refers to a mutual relationship between two individuals that typically extends beyond that of simply being together. Best friends prefer and enjoy being together, they express similarities, they have common interests, their relationship is freely chosen, and they indicate a long-lasting intimate "we-relation" that creates unique life stories between the dyad (Greve, 2009; Newcomb et al., 1993). Parker and Asher (1993) found that among the 881 3rd to 5th graders in their sample, 54.9 % had a very best friend.

Research indicates that best friendship is related to a variety of positive outcomes concerning children's health and well-being, including attachment, identity (Frønes, 1994), and self-confidence (Greve, 2009). Importantly, having a mutual best friend is found to buffer children against victimization and internalizing difficulties (Kochenderfer & Ladd, 1997; Hodges, Malone, & Perry, 1997; Hodges, Boivin, Vitaro, & Bukowski, 1999; Parker & Asher, 1993), particularly friendships that offer provisions such as support, security, and safety (Ladd et al., 1997).

On the contrary, some researchers argue that friendship is a complex phenomenon based upon both positive and negative components, which may move back and forth continuously (Michelsen, 2004; Berndt & Perry, 1986). Although friendship essentially

consists of joy and harmony, it also includes the negativities of conflicts, competition, and disappointment. Hence, friendships come in diverse forms and transform with time, but are necessarily based upon a mutual wish of wanting to solve difficulties that arise along the way in order for the relations to survive (Greve, 2009).

Popularity. Popularity is a more complex concept of friendship that can be divided into the subcategories of sociometric and perceived popularity, respectively. The latter of which is central in this study.

Sociometric popularity. Sociometric popularity reflects how liked or accepted the child is among peers. This measure is commonly based upon peer nominations, especially among younger children, and often concerns one-way relations. Sociometric popular children are typically described as physically attractive, cooperative, lead peers (Coie, Dodge, & Coppotelli, 1982), are helpful and supportive, follow rules, demonstrate athletic and academic competence (Coie, Dodge, & Kupersmidt, 1990), show high levels of sociability and cognitive abilities (e.g. social problem-solving skills, positive social actions, positive social traits, friendship relations), and low levels of aggression (e.g. disruptive behavior) and withdrawal (e.g. loneliness) (Newcomb et al., 1993).

Sociometric popular children typically receive the most nominations as both liked peers and best friends, which suggests they maintain their high peer status and positive social relations because of their social competencies to facilitate and enhance, rather than undermine, interpersonal goals (Newcomb et al., 1993). Research shows that sociometric popularity is moderately stable and that it decreases over longer periods of time (Brendgen, Vitaro, Bukowski, Doyle, & Markiewicz, 2001).

Perceived popularity. Perceived popularity differs from sociometric popularity by that it denotes the social impact or reputation rather than social preference of a child. This measure is obtained by directly asking children who they perceive as popular versus unpopular, as opposed to whom they like or dislike (LaFontana & Cillessen, 2002). Similar to that of sociometric popularity, perceived popularity often denotes one-way relations. Interestingly, in a study comparing perceived popularity with sociometric popularity, Parkhurst and Hopmeyer (1998) found that children who scored high on the former but low on the latter were described as stuck-up, aggressive, and dominant. On the contrary, children who scored high on the latter but low on the former were labeled as kind and trustworthy, reflecting the findings above. Furthermore, children who were high on both dimensions possessed a combination of these

characteristics. Hence, as opposed to sociometric popularity that exclusively contains prosocial behavior; perceived popularity is seen to encompass additional aggressive or disruptive traits (LaFontana & Cillessen, 2002; Dodge et al., 1986; Newcomb et al., 1993; Cillessen & Mayeux, 2004).

These characteristics of perceived popularity correspond to the controversial peer status, in which children receive both high liking and disliking scores. Researchers have established that the behavior of controversial children reflects a combination of that found among popular and rejected children. Specifically, controversial children are shown to score high on aggression and high on sociability, the former even more so than that of rejected children (Coie et al., 1982; Newcomb et al., 1993).

Research proposes that controversial and perceived popular children may possess qualities, such as elevated social and cognitive abilities, that buffer them against any negative consequences of their behavior (i.e. punishment from adults, peer rejection, and internalizing symptoms), which furthermore encourages escalating aggressive behavior. Not only do prosocial skills seem to balance out the aggressive component related to controversial and perceived popular children, but they also transmit to the qualities reflecting sociometric popular children. This indicates that controversial and perceived popular children may be as liked or accepted as sociometric popular children despite their aggressive and disruptive characteristics, because their behavior repertoire stands out as primarily involving socially skilled behavior that promotes positive social outcomes (Dodge et al., 1986; LaFontana & Cillessen, 2002). Unfortunately, these children may be quite resistant to change due to their lack of emotional problems that contributes little motivation to alternate behavior style (Rose & Swenson, 2009; Little et al., 2003; Cook et al., 2010).

Consequently, studies reveal that controversial and perceived popular children not only are well-adjusted compared to their less popular counterparts, but they also have more close best friendships (Franzoi, Davis, & Vasquez-Susson, 1994; Parker & Asher, 1993). This highlights how perceived popularity and best friendship typically co-occur, although their provisions and adjustment outcomes may vary, as outlined above. Franzoi et al. (1994) summarize that: "In short, popular and controversial adolescents appear to live in a somewhat richer, more varied, and rewarding social environment than do the lower status rejected and neglected students" (p. 469), underlining the essence of reputation and acceptance on children's adjustment and well-being.

On the contrary, Parker and Asher (1993) discovered that many low accepted children (particularly boys) have satisfactory friendship relations, and not all highly accepted children

(~33%) have friends. Not only does this indicate heterogeneity within status groups (Perry, Kusel, & Perry, 1988), but it also highlights how the experiences and provisions obtained by children may differ substantially (Ladd et al., 1997).

Perceived Popularity Unpacked

A wide range of research illustrates significant positive correlations between perceived popularity and prosocial skills (e.g., Clark & Ladd, 2000). However, perceived popularity has been discussed to compromise additional aggressive and disruptive traits, which necessarily must be examined in order to obtain a holistic understanding of the complex phenomenon.

Types of aggression. The concept of aggression commonly denotes bullying behavior in general. In this study, however, the notion has been separated into the two types of overt and relational aggression, respectively.

Research consistently shows that overt and relational aggression is highly correlated, yet unique facets of aggression (Crick & Grotpeter, 1995; Little et al., 2003; Salmivalli & Nieminen, 2002). For instance, Little et al. (2003) found that although the reliable variance of the two types typically level 69%, it simultaneously outlines how 31% of the reliable variance does not. It has been put forth that the majority of aggressive children primarily display only one form of aggression (Crick & Grotpeter, 1995; Rys & Bear, 1997), in reflection of its effectiveness regarding the particular social challenge in question (Little et al., 2003).

Although overt aggression has received much attention within the field of developmental psychology for several decades, research on more discrete acts of aggression has only recently started to prosper. Nonetheless, relational aggression is argued to be an essential component in the study of childhood friendships and adjustment.

Overt aggression. Overt aggression has been defined as direct physical or verbal acts of aggression, such as uncontrolled and inappropriate expressions of hostility, anger, and affection to actual or perceived dangers (i.e. reactive aggression) (Crick & Grotpeter, 1996; Little et al., 2003; Brendgen, Vitaro, Boivin, Dionne, & Pérouse, 2006; Salmivalli & Nieminen, 2002). Research shows that overtly aggressive children typically experience low levels of conflict within the friendship, but they tend to overtly aggress together with peers towards others outside their social network as means of enhancing their reputation (Crick & Grotpeter, 1996).

This type of aggression has characteristically been associated with misinterpretation of social cues, lack of self-control, and importantly, negative interpersonal outcomes (i.e. social

censure from adults, peer problems, and internalizing problems). The latter illustrating how angry outbursts seldom are tolerated by peers and adults (Rose, Swenson, & Waller, 2004; Rose & Swenson, 2009; Little et al., 2003; Brendgen et al., 2006; Salmivalli & Nieminen, 2002).

Researchers propose that harsh and threatening socialization experiences may contribute to the development of a reactive aggression style, whereby children respond to histories of abusive, controlling, and punitive parenting (e.g. Dodge, 1991). Others suggest it may be related to inherited personality characteristics, such as a *hostile attribution bias*, reflecting the tendency to attribute exaggerated hostility to others (Crick & Dodge, 1994). Brendgen et al. (2006) revealed that 39% of the variance of reactive aggression in their sample comprising 172 pairs of 6-year-old twins could be attributed genetic factors, while 61% was explained by unique environmental influences. Not only does this indicate complex etiological underpinnings, but it also suggests that children's social surroundings may be powerful with regards to the expression of latent aggression, including peer relations.

Relational aggression. In stark contrast, relational aggression refers to a more discrete and indirect form of aggression whereby others in one's social network are used as means of inflicting harm as opposed to acting oneself. This reflects a combination of instrumental and relational goals (i.e. proactive aggression) (Crick & Grotpeter, 1995; Crick & Grotpeter, 1996; Lagerspetz et al., 1988; Little et al., 2003; Salmivalli & Nieminen, 2002). Studies demonstrate that relationally aggressive children have higher levels of relational aggression within the friendship, but additionally also higher levels of intimacy (i.e. self-disclosure, reciprocity, trustworthiness, and loyalty) than other children (Crick and Grotpeter, 2006; Newcomb et al., 1993; Parker & Asher, 1993). This suggests that relationally aggressive children are capable of hurting peers, but not enough to destroy the friendship (Crick & Grotpeter, 1996; Salmivalli & Nieminen, 2002).

The complexity of such relations reflects the very nature of perceived popular children who are seen to both perform prosocial and aggressive behavior as explored above. Importantly, researchers have anticipated that relationally aggressive acts are intended to strategically manipulate others in order to gain advantages, such as control over the peer context and heightened peer status (Bukowski, 2003; Crick & Grotpeter, 1995; Crick & Grotpeter, 1996; Rose & Swenson, 2009). Perceived popular children are capable of obtaining such power over their social worlds due to their advanced social skills by which they carry out relational aggression rather anonymously, avoid counteraggression, and deny the mischievous

intent of others (Rose & Swenson, 2009; Little et al., 2003; Cook et al, 2010; Björkqvist et al., 1992; Salmivalli & Nieminen, 2002). This supports Rose et al.'s (2004) finding of a unique significant positive association between relational aggression and perceived popularity, but neither a significant nor positive association between overt aggression and perceived popularity, which suggests that only relational aggression is significant with respect to perceived popularity.

Researchers propose that this proactive aggression style prosper in reflection of supportive peer environments (Dodge, 1991) and an affirmative parenting style with little monitoring and few rules (Poulin & Boivin, 2000). Furthermore, a temperamental style concerning underreactivity in the sympathetic nervous system (Kagan & Snidman, 1991), and psychopathic characteristics such as the absence of guilt and the manipulation of others for one's own benefit (Frick, Cornell, Barry, Bodin, & Dane, 2003), have been put forth as potential underlying mechanisms. In their twin study, Brendgen et al. (2006) discovered that 41% of the variance in proactive aggression was rooted in heritability factors, while 59% of the variance was explained by nonshared environmental influences. Similar to the etiology of reactive aggression, this suggests that children's social contexts may foster the display of underlying disruptive traits.

Why Do Children Aggress?

Evolutionary psychological perspective. *The evolutionary psychological perspective of human behavior* proposes that "the psychological mechanisms underlying aggression are hypothesized to be context-sensitive solutions to particular adaptive problems of social living" (Buss & Shackelford, 1997, p. 605). Aggression may function as a strategy by which specific adaptive problems are solved more effectively than by the use of alternative actions due to the process of "inclusive fitness" and have thereby been conserved, replicated, and spread throughout populations over time. Hence, aggression is an adaptive strategy present in every human being, but is only visible when evoked by particular contextual conditions (Buss & Shackelford, 1997; Guerra & Huesmann, 2004).

Buss and Shackelford (1997) link aggression to several adaptive problems for which it may have evolved as a solution, including the negotiation of status and power hierarchies. Specifically, they suggest that the use of aggression corresponds to an increase in status and power within the existing social hierarchies to which one belongs. The elicitation of relational aggression, particularly, may relate to adaptive strategies of power achievement and maintenance, social acceptance, and a sense of belonging among certain children.

Importantly, these behaviors can be assumed to have proven more efficient and beneficial in relation to the goals in question than that of alternative actions such as overt aggression, possibly due to the relative absence of negative emotional consequences as outlined.

Cognitive-ecological model of aggression. In line with the evolutionary psychological perspective of aggression, the psychological mechanisms underlying aggression may be regarded as information-processing devices guiding human behavior. According to *the cognitive-ecological model of aggression*, “cognitive processes shape the representation, processing, and communication of information in social settings” (Guerra & Huesmann, 2004, p. 178). This is an ecological approach highlighting the mediating role of cognitive processes in the interrelationship between innate, contextual, and situational inputs to behavioral responses (Guerra & Huesmann, 2004). Hence, aggression should not be regarded solely as an innate factor reflecting certain children’s personalities, but rather as an output building upon the specific combination of a variety of factors.

The cognitive-ecological model of aggression emphasizes the essence of evolved psychological mechanisms or cognitive processes of aggressive behavior. Individuals are believed to take in specific forms of input or cues, interpret and select relevant cues with the use of decision rules, and finally produce an output in the form of physiological activity, input to other mechanisms, or manifest behavior (Buss & Shackelford, 1997; Guerra & Huesmann, 2004). In turn, these outcomes are believed to influence changes in the individual’s cognitions, reflecting a feedback loop whereby cognitions, interpretations, and responses are interrelated in an “if-then” relationship (Guerra & Huesmann, 2004).

Accordingly, LaFontana and Cillessen (2002) put forth that the reputations of perceived popular children are important in research because “one can measure individual perceivers’ general beliefs (schemas or perceptions) about others by examining the positive and negative behaviors and traits that the perceivers think corresponds with popularity” (p. 636). This is valuable regarding the prevention and intervention of harmful aggression among young children.

The acquirement of normative standards. A prominent rule of social interaction is associated with normative beliefs about aggression, which refers to “one’s perception of the appropriateness of aggression in particular settings” (Guerra & Huesmann, 2004, p. 187). Normative beliefs are believed to be long-lasting cognitive representations that commonly derive from either the observation of one’s own aggressive acts or by observing the behavior of others (Huesmann & Guerra, 1997).

Several researchers have focused on the significance of *imitation* in the communication between children and the formation of normative beliefs, in particular. For instance, Rayna (2001) found that children as young as seven months old are capable of creating social relations with other infants by means of imitation. Children are typically believed to learn from others who are more advanced than themselves within the aspect of concern (Vygotsky, 1978), regardless of the model's gender and age (Williams, Sheridan, Sheridan, & Pramling, 2001). This reflects *social learning theory* (Bandura & Walters, 1963), which puts forth that children observe their peers within powerful social contexts and use these interpretations as a means of guiding their own behavior.

According to Piaget (1969), normative beliefs begin to emerge as stable constructs around the age of 7 or 8 years, reflecting children's increased participation in games and interactions concerning rules. In relation to this, studies shows that infants aged four months exhibit angry facial expression (Stenberg & Campos, 1990), toddlers use aggression as a means of taking toys from others (Campbell, 1993), while older children create affiliations and social hierarchies through "rough and tumble" play (Humphreys & Smith, 1987). This emphasizes how imitation may be a powerful source, particularly among young children, with regards to the acquirement of an aggressive behavioral style that later may develop into more stable normative standards that guide succeeding behavior.

Reinforcement. Research illustrates that aggressive children tend to gravitate towards one another as well as towards normative contexts, a type of *niche-picking*, resulting in both the formation of an antisocial peer culture and escalating aggressive behavior (Scarr & McCartney, 1983; Guerra & Huesmann, 2004; Cairns, Cairns, Neckerman, Gest, & Garipey, 1988; Cook et al., 2010). Contexts in which aggression is adaptive, valued, and normative fosters rules and behavior expectations as to who is accepted and included in the particular peer culture, as opposed to who is excluded. This was supported by Cairns et al. (1988) who discovered that aggressive children typically have friends that are aggressive themselves, reflecting homogeneity within the peer group.

Consequently, individual risk factors (i.e. aggressive behavioral styles) may only become expressed in relation to particular social contexts (i.e. peer culture), so that certain children are particularly vulnerable of internalizing and acting upon aggressive standards (Hodges et al., 1997; LaFontana & Cillessen, 2002). This highlights the importance of investigating environments such as kindergartens, schools, and neighborhoods in order to

understand children's acquirement of aggressive behavioral styles (Garcia Coll, Lamberty, Jenkins, McAdoo, Crnic, Wasik, & Vazques Garcia, 1996).

Potential Moderating Factors between Perceived Popularity and Aggression

Developmental effects. Studies reveal that perceived popularity and aggression are negatively correlated during childhood, but that it alternates during adolescence so that perceived popularity becomes positively correlated to aggression with time (Cook et al., 2010; LaFontana & Cillessen, 2002; Rose et al., 2004; Xie, Li, Boucher, Hutchins, & Cairns, 2006; Bukowski, Sippola, & Newcomb, 2000). Rose et al. (2004) propose that: "Aggressing in ways that establish or maintain perceived popularity likely requires emotional control and a keen understanding of interpersonal relations" (p. 380), supporting the idea that perceived popular aggressors typically are older and more socially and verbally competent than aggressors with lower peer status. This in turn is associated with both relational aggression and adjustment (Rose & Swenson, 2009; Little et al., 2003; Bukowski et al., 2000; Björkqvist et al., 1992), as explored earlier. Rose et al., (2004) found that only relational aggression was uniquely and consistently positively correlated to perceived popularity for 7th- and 9th- graders in their sample. Similarly, LaFontana and Cillessen (2002) demonstrated that although perceived popularity and overt aggression was negatively correlated for 4th- and 5th-grade participants, overt and relational aggression were positively correlated to perceived popularity for 6th-, 7th-, and 8th-graders.

Björkqvist et al. (1992) put forth that the developmental-aggression pattern typically progress from physical- to verbal- to indirect aggression in relation to children's age-dependent sociocognitive skills. This reflects Buss and Shackelford's (1997) evolutionary psychological perspective of human behavior whereby the diverse types of aggression may be viewed as adaptive social strategies that advance with age. The idea that physical aggression may be the springboard for which children develop indirect forms of aggression (Little et al., 2003) suggests that relational aggression should be the most prevalent form of aggression among adults (Björkqvist et al., 1992).

On the contrary, one of the most robust findings within the research on aggression indicates a high degree of continuity of aggression throughout life, across all levels of aggression. In other words, children who score low on aggression are seen to be less aggressive as adults, while those who score high on aggression in childhood are likely more aggressive as adults (Huesmann & Moise, 1998). This highlights that childhood aggression may be a risk factor for developing later antisocial and violent behavior regardless of the

aggression style in question and, importantly, that aggression may be rather challenging to prevent or change, especially in situations where the fostering context remains constant (Guerra and Huesmann, 2004).

Gender effects. Studies demonstrates that whereas boys generally perform more physical aggression than girls (Crick & Grotpeter, 1995; Björkqvist et al., 1992; Coie et al., 1982), (older) girls characteristically are more relationally aggressive than boys (Crick & Grotpeter, 1995; Crick, 1997; Björkqvist et al., 1992). Others suggest that boys enact equal or higher amounts of both overt and relational aggression than girls (Crick, 1997; Little et al., 2003), but that the difference is smallest for the latter (Little et al., 2003).

Researchers suggest that the perceived popularity-aggression linkage may only be relevant to children who display gender normative aggression (Rose et al., 2004). This indicates that males and females have diverse peer cultures in which they negotiate status and power (Kochenderfer & Ladd, 1997). Specifically, Rose et al. (2004) propose that “overtly aggressive girls and perhaps relationally aggressive boys may not be popular because they may be seen as odd or unusual” (p. 380). This was supported by Lagerspetz et al. (1988) who established that the friendship pattern of the two genders differ significantly, so that boys typically form rather big and loose peer groups, while girls likely form smaller and tighter cliques. Girls are additionally often found to have one mutual best friend. In relation to this, Rose and Rudolph (2006) propose that whereas girls commonly value relationship-preservation goals and best friendships (i.e. likeability), boys generally emphasize status-oriented goals (i.e. reputation). Put together, these findings signify that girls’ close and intimate friendship ties may facilitate relational aggression directed at a third party, while boys’ larger peer group structure fosters more competitive and direct aggression within the social network.

The fact that girls typically develop, at least verbally, faster than boys make it possible that they acquire the advanced strategies of relational aggression at an earlier age and that the latter catch-up later in life (Björkqvist et al., 1992). This was supported by LaFontana and Cillessen (2002) who found that girls associated perceived popularity with aggression at a younger age than boys.

Others reveal that males and females process social information differently; reflecting Guerra and Huesmann’s (2004) cognitive-ecological model of aggression outlined above. Studies show that girls have more advanced interpersonal skills, cue sensitivity, peer perception accuracy, and status awareness than boys (e.g. Little et al., 2003), signifying they

have enhanced abilities to distinguish who they perceive as popular versus unpopular within the peer group (LaFontana & Cillessen, 2002).

Research Purpose

A review of previous research highlights how the concept of aggression statistically may be separated into the two similar yet unique facets of overt and relational aggression. A common finding is that whereas the angry outbursts associated with overt aggression typically are socially unacceptable by peers and adults (Rose et al., 2004; Rose & Swenson, 2009; Little et al., 2003; Brendgen et al., 2006; Salmivalli & Nieminen, 2002), the more discrete and rather anonymous disruptive traits of relational aggression may contribute to favorable reputations and control within the social network. Studies reveal that relational aggressors are “socially smart” bullies capable of obtaining such prestige and power by means of strategically manipulating peers to harm others as opposed to aggressing oneself (Little et al., 2003; Cook et al., 2010; Rose & Swenson, 2009; Bukowski, 2003; Crick & Grotpeter, 1995; Crick & Grotpeter, 1996; Salmivalli & Nieminen, 2002). The underlying mechanisms of the perceived popularity-aggression linkage, however, are in need of further clarification.

The aim of this study is to investigate whether overt and relational aggression has any effect on children’s status within the peer group, and to what extent the individual characteristics of language, ToM, and prosocial skills uniquely contribute to these associations. Developmental and gender effects will be tested for as these are believed to reflect essential sociocognitive abilities rooted in the aggression styles in question. The integration of these factors into an ecological model is believed to give a more realistic apprehension of the complex perceived popularity-aggression phenomenon.

Research within the field of aggression has primarily focused upon schoolchildren and teenagers, which may not necessarily be generalizable with regards to younger children. Essentially, this study examines kindergarten children aged 2-6 years. This is an interesting and important group to explore because they are at the beginning of establishing norms, values and behavioral patterns that will affect succeeding behavioral, social, cognitive, and emotional adjustment. Hence, they may provide valuable information with regards to the development of potential prevention and intervention programs aimed towards related internalizing and externalizing difficulties.

Both combined and separate evaluations from the children, parents, and teachers, respectively, will be investigated, as the inclusion of diverse informants is considered valuable with respect to reliability and validity of the findings.

The following research questions will be explored:

- 1) Is there a direct effect between perceived popularity and aggression among young children? Do overt and relational aggression affect perceived popularity differently?
- 2) Is there a direct effect between overt and relational aggression?
- 3) Are there any direct effects regarding aggression and the presumed underlying mechanisms of language, ToM, and prosocial skills? Do these factors affect overt and relational aggression differently?
- 4) Are there any direct effects regarding perceived popularity and the presumed underlying mechanisms of language, ToM, and prosocial skills?
- 5) Do language, ToM, and prosocial skills have any indirect effects on the perceived popularity-aggression linkage?
- 6) Do age and gender moderate the effect between perceived popularity and aggression?

Based upon previous research one would expect to find a positive direct effect between perceived popularity and relational aggression, and a negative direct effect regarding perceived popularity and overt aggression within the peer group. It is furthermore expected to find a positive direct effect between the two types of aggression, reflecting (at least partial) shared genetic dispositions.

The individual factors of language, ToM, and prosocial skills are all presumed to directly affect perceived popularity and relational aggression positively, and overt aggression negatively. Prosocial skills are expected to have a stronger impact on the perceived popularity-aggression linkage than language and ToM.

With respect to developmental effects, it is expected that the effect between relational aggression and perceived popularity is strengthened in reflection of increased age, while the effect between overt aggression and perceived popularity is weakened. Similarly, it is expected that the effects regarding language and ToM, ToM and prosocial skills, as well as language and prosocial skills all are strengthened in reflection of increased age. The effects of language, ToM, and prosocial skills on relational aggression and perceived popularity are expected to be strengthened with age, while they are assumed to weaken in relation to overt aggression.

In consideration of gender, it is expected to find a stronger effect between perceived popularity and relational aggression for girls than for boys, as well as a stronger effect between perceived popularity and overt aggression for boys as opposed to girls. This is assumed to reflect girls' positive direct effect on language, ToM, prosocial skills.

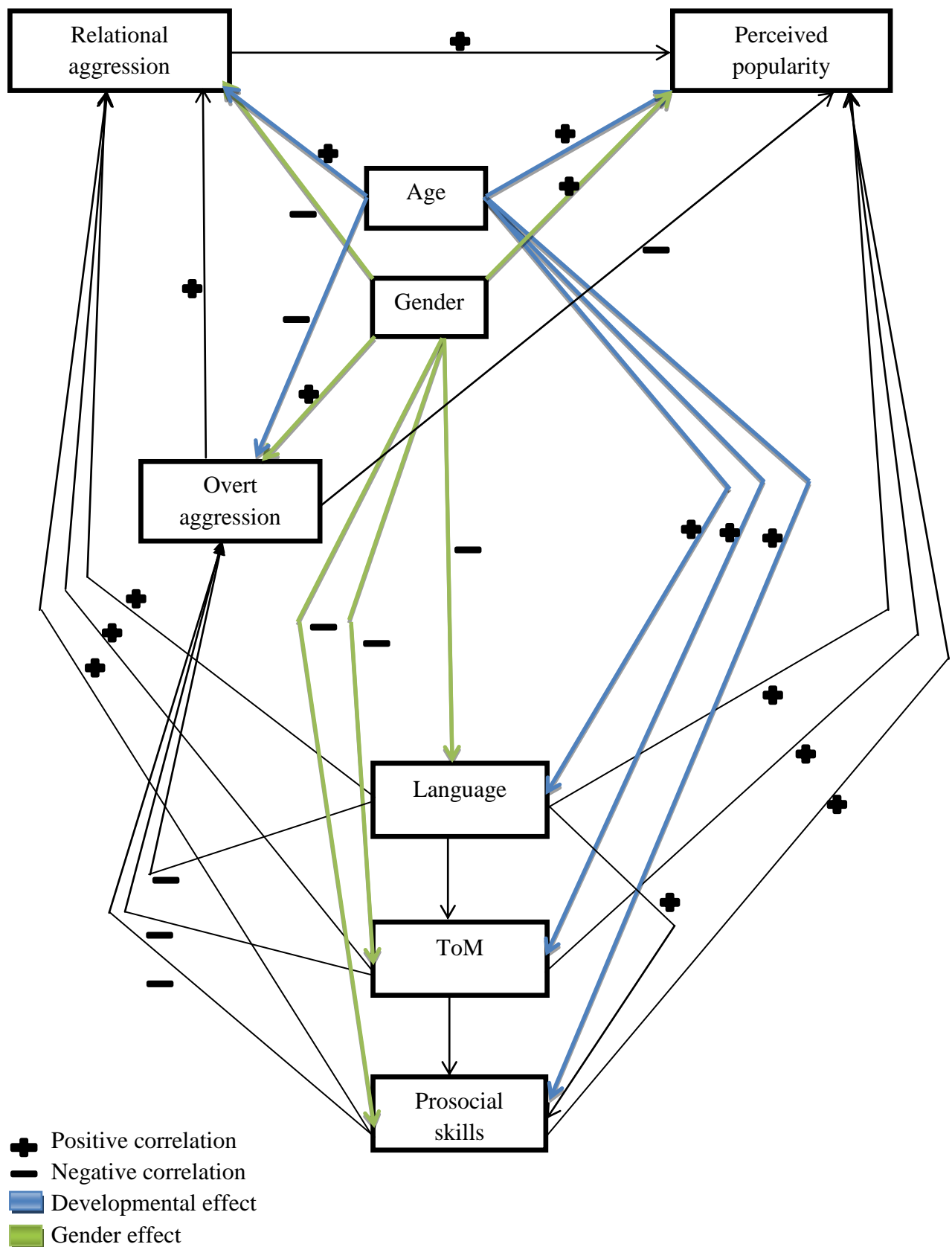


Figure 1. Expected correlations between the respective variables at T1

Method

The present research is a sub-study of the project *The Matter of the First Friendship* (MFF), conducted between 2006 and 2010. The objective was to investigate the significance of social relations in early childhood for succeeding social, cognitive, behavioral, and emotional adjustment. MFF was led by Anne Inger Helmen Borge at the University of Oslo (UiO) in cooperation with expert researchers within the field of developmental psychology from the University of Montreal, Canada, Queensland University of Technology, Australia, and the University of Bern, Switzerland. MFF was funded through a research grant from the Norwegian Research Council and was ethically approved by the Norwegian Regional Ethics Committee and the Norwegian Data Inspectorate.

MFF utilized a longitudinal, multi-informant, and multi-methodological design. Data was collected over four time periods (T1-T4) at yearly intervals, involving the same children, parents, and kindergarten teachers (later elementary teachers) as informants at each time period. The children were interviewed and tested, while the parents and teachers responded to questionnaires.

Participants

This study involved a sample of 559 children (53% girls, 47% boys) aged 2-6 years (average= 4 years) at T1, who attended a total of 33 public and private kindergartens within the semi-rural municipalities of Gran and Lunner at Hadeland, Norway, during the spring of 2006. The participation rate was 56%. No exclusion criteria was practiced with regards to ethnicity, however, the sample was exclusively White Caucasian. It was decided to include all the child interviews even though not all children were assessed by a teacher (N=468).

Procedure

Participation in the project required informed consent from the parents and teachers, in addition to consent from parents on behalf of their children. The assessment was based upon the first data collection (T1) within the project and included the children, parents, and teachers as informants. Each child was interviewed and tested individually. Additionally, the parents and teachers completed respective questionnaires about each child.

Child interviews. The child interviews were based upon practical experiences and findings from a pilot study performed at Sogn Kindergarten belonging to UiO, during the winter of 2006. Children aged two years and upwards were found to be valuable for inclusion

in subsequent data collections. The instruments and tests utilized were age-relevant and internationally recognized.

In order to avoid discrimination within the group, all the children who desired to were interviewed. At instances where written consent by a parent was not present, the child was given the opportunity to perform a shorter version of the interview without any data being recorded.

The children were interviewed individually in separate rooms in their daily kindergarten or school environment by the means of structured interviews including tests. Besides a few exceptions, these were either performed by trained personnel from kindergartens or schools other than where the child attended, or by students associated with the project. This was believed to limit the interviewers' influence on the children's responses. The interviewers and children had met at a previous occasion by which the study was presented and familiarized.

The aim of the child interviews was to outline aspects concerning the children's friendships, peer status, aggressive behavior, prosocial skills, ToM, emotion attribution, concentration and memory. This study utilizes data from all measures except the latter three.

Questionnaires to the parents and the teachers. The parents and teachers filled out structured questionnaires with respect to the children's language, social behavior and adjustment, and personal relations. In addition, the parents responded to items reflecting history of kindergarten attendance, family and home environments, socioeconomic status (education, work, and income), and mental health. This study utilizes information reflecting the children's language and social behavior (level of aggression and prosocial skills) from these questionnaires.

Popularity Measures

The Bus Trip. Popularity among the children was measured by means of *the Bus Trip* (Perren & Alsaker, 2006). The test utilizes a two-dimensional cardboard bus with windows in which portraits of the children can be placed (figure 2). The bus is constructed so that the number of windows can be adjusted, reflecting the size of the kindergarten in question. Five bus windows are presented for kindergartens with groups of fifteen children or more, while the number is lowered to three bus windows for kindergarten groups numbering eight or less. The idea behind this design is that limited room on the bus will reveal indications of popularity and friendship among the children.

The test is initialized when the interviewer has assured that the child is familiar with all the peer portraits. He/she is told that: “now we are going to pretend that you are going for a bus ride. You can sit behind the driver”. The child is given the chance to place his/her own portrait in the window behind the driver, and further asked “which children from the kindergarten do you want to take with you on the bus?”. It is clearly specified that the bus does not have to be filled up. The child names or points to the portraits of children he/she wishes to include on the bus trip, and places them in the remaining bus windows.

Popularity is indicated by terms of how many times a child has been nominated as companion, and is utilized continuously as an indication of popularity in this study. High scores indicate high peer status, while low scores indicate low peer status. The nomination order is not taken into consideration.

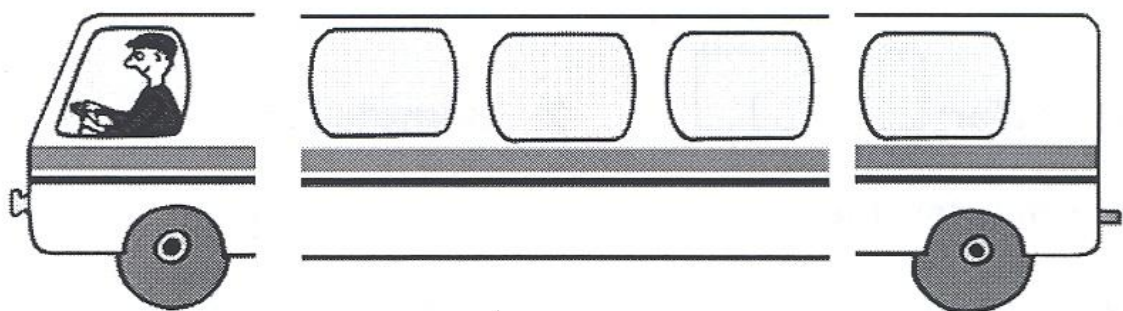


Figure 2. The cardboard bus: Instrument for measuring popularity among young children.

Validity. The bivariate correlational analysis in table 3 reveals that the number of positive nominations correlates moderately-strongly with the assumed related phenomenon of the children’s evaluation of prosocial skills ($r=.49$, $p<0.01$), which indicates that “the Bus Trip” is a valid instrument for measuring perceived popularity among this age-group.

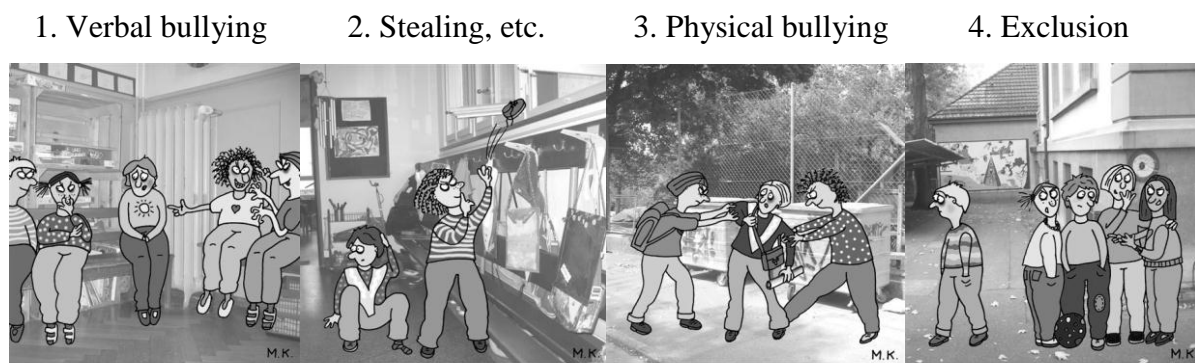
Aggression Measures

Researchers commonly refer to aggression in terms of representing one phenomenon that encompasses diverse forms of bully behaviors among children. Hence, it was decided to pursue the concept from a different perspective by separating aggression into the two similar yet diverse notions of overt and relational aggression.

Aggression assessed by the means of peer nominations. Aggression among the children was measured by means of positive nominations for overt and relational aggression, respectively. The test utilizes illustrations of aggressive behavior (figure 3) (Perren & Alsaker, 2006) and photographs of peers in the particular kindergarten or school.

The test is initialized by the interviewer showing an illustration of aggressive behavior to the child and carefully explaining what it represents. The child is then asked: “which child from your kindergarten often teases, or say bad things about others?”, and is given the opportunity to point to the respective photos at the table. The same procedure is followed for “often takes things secretly, hides them, or destroy them?”, “often hits, kicks, or shoves others?”, and “often excludes others from play?”. The first and the third case reflect overt aggression, while the second and the fourth case signify relational aggression.

Overt and relational aggression is indicated by terms of how many times a child has been nominated. High scores indicate high levels of aggression, and low scores indicate low levels of aggression. The nomination order is not taken into consideration.



Retrieved from Schulverlag Bern, Marianne Kauer, Alsaker Gruppe für Prävention, 2004.

Figure 3. Illustrations of bullying: Instrument for measuring overt and relational aggression among young children.

Reliability and validity. The numbers of positive nominations for overt and relational aggression were merged into two new scales. Reliability analyses revealed $\alpha=.74$ for overt

aggression and $\alpha=.60$ for relational aggression, indicating that both of the children's aggression measures are reliable.

The bivariate correlation analysis in table 3 demonstrates that the children's nominations for overt aggression are related to both the parents' ($r=.20$, $p<0.01$) and the teachers' ($r=.30$, $p<0.01$) evaluations of the concept. Similarly, the children's nominations for relational aggression are associated with both the parent's ($r=.11$, $p<0.05$) and the teachers' ($r=.12$, $p<0.05$) respective measures. Taken together, this signifies concept validity for the children's aggression measures in this study.

Aggression assessed by the parents and the teachers. Aggression was measured by means of questionnaires filled-out by the parents and teachers, respectively. These were based upon Goodman's (1997) *Strength and Difficulties Questionnaire* (SDQ), which is a brief questionnaire aimed at screening psychological attributes among 3-16 year olds. SDQ consists of 25 items that reflect the five behavioral dimensions of "conduct problems", "emotional symptoms", "hyperactivity/inattention", "peer relationship problems", and "prosocial behavior", respectively. The 5 items within the former sub-scale is of particular interest in this study, in addition to the 8 items supplemented by the MFF team. A 3-point Likert scale including the options: "does not apply", "applies somewhat", and "certainly applies" was utilized.

Overt aggression with respect to the children's behavior was assessed by the eight items: "often temper tantrums or bad mood" (SDQ), "fights often with other children" (SDQ), "gets into fights easily", "hits, bites or kicks other children", "reacts in an aggressive way when contradicted", "reacts with anger and fighting when someone accidentally hurts him/her", "reacts in aggressive way when teased", and "is often disobedient or refuses to do what adults ask" (SDQ).

Relational aggression with respect to the children's behavior was assessed by the six items: "takes things secretly, without permission" (SDQ), "lies or cheats often" (SDQ), "has encouraged other children to pick on a particular child", "is able to persuade others to do what he/she wanted", "does not seem to feel guilty after misbehaving", and "holds a grudge for a long time against children he/she has argued with".

Reliability and validity. The items were merged into two new overt aggression scales and two new relational aggression scales for the parents and teachers, respectively. The reliability for overt aggression was high for both the parents ($\alpha=.71$) and the teachers ($\alpha=.90$). Reliability analysis for relational aggression, on the other hand, showed high reliability for the

teachers ($\alpha=.63$), but very low reliability for the parents ($\alpha=.31$). The item “is able to persuade others to do what he/she wants” was intended to be comprised within the relational aggression measures, however, its negative effect regarding the teachers’ reliability ($\alpha=.58$) resulted in exclusion.

The bivariate correlation analysis in table 3 illustrates relationships both between the adults’ overt aggression ($r=.23$, $p<0.01$) and relational aggression ($r=.22$, $p<0.01$) measures. This indicates that the parents’ and teachers’ evaluations are valid for measuring overt and relational aggression among young children.

Prosocial Skills Measures

Prosocial skills assessed by means of peer nominations. The children’s prosocial skills were measured by means of positive nominations for prosocial behavior by peers in the particular kindergarten or school. A combination of illustrations representing prosocial behavior (Perren & Alsaker, 2006) and photographs of peers were utilized.

First and foremost, the children were familiarized with what the illustrations signified as well as given examples of how peers may help one another. When the concept of prosocial behavior was understood, the interviewer attended to the children individually with the questions of: “which children from your kindergarten are good at helping other children?”. The child was then given the opportunity to point to the respective peer photos. The same procedure was followed for “good at comforting other children?”, and “good at sharing with other children?”.

Prosocial behavior is indicated by terms of how many times a child has been nominated. High scores indicate high levels of prosocial skills, and low scores indicate low levels of prosocial skills. The nomination order is not taken into consideration.

Reliability and validity. The three items of helping, comforting and sharing were merged into a new prosocial skills scale with $\alpha=.72$, indicating high reliability.

The bivariate correlation analysis in table 3 demonstrates weak-moderate associations between children’s prosocial skills and the presumed related variables of age ($r=.42$, $p<0.01$), language evaluated by the parents ($r=.20$, $p<0.01$), language evaluated by the teachers ($r=.24$, $p<0.01$), and ToM ($r=.20$, $p<0.01$). This illustrates that peer nominations is a valid method for measuring prosocial skills among children this age-group.

Prosocial skills assessed by the parents and the teachers. The parents and teachers filled-out questionnaires based upon Goodman's (1997) SDQ. The 5 items within the "prosocial behavior" sub-scale is of particular interest with regards to this measurement. It encompasses the statements of: "considerate of other people's feelings", "shares readily with other children (sweets, toys, others)", "helpful if someone is hurt, upset if feeling ill", "kind to younger children", and "often volunteers to help others (parents, other adults, children)". The parents and teachers responded to the alternatives "does not apply", "applies somewhat", and "certainly applies" on a 3-point Likert scale.

In this study, prosocial skills scores are utilized as a quantitative variable, by which high scores indicate high levels of prosocial behavior, and low scores indicate low levels of prosocial behavior.

Reliability and validity. The items were merged into two new prosocial skills scales reflecting the parents' and the teachers' assessments. Reliability analyses indicated high reliability for both scales ($\alpha=.69$ and $\alpha=.84$, respectively).

The bivariate correlation analysis in table 3 reveal a relationship between the adults' prosocial skills measures ($r=.11$, $p<0.05$). Additionally, the parents' and teachers' evaluations of prosocial skills and overt aggression, respectively, are shown to correlate negatively ($r=-.13$, $p<0.01$; $r=-.33$, $p<0.01$). Taken together, this indicates construct validity for both of the adults' measures of prosocial skills among the present age-group.

Theory of Mind (ToM) Measures

ToM ability assessed by means of peer nominations. The children complete two separate ToM tests developed by researchers at the Psychological Institute, UiO (Melinder, Endestad, & Magnussen, 2006). The objective of the tests is to investigate the children's ToM ability based upon Maxi-experiment tasks (Wimmer & Perner, 1983) and Smarties-experiment tasks (Gopnik & Astington, 1988), which signify whether they understand that others may respond in relation to deception. In line with ethical concerns, the children are praised within both tests regardless of whether they responded correctly.

The material utilized in the first test (ToM 1) consists of an empty milk carton and a wallet containing four coins. The test is initialized by the researcher asking the child about whether he/she believes that the coins are to be found within the milk carton versus the wallet. If the child's reply is correct, the researcher removes the coins from the wallet and places

them into the milk carton. The child is then asked where the next child performing the test will believe the coins are placed.

In the second test (ToM 2), the researcher initially presents the child with a familiar pastilles box and asks the child what he/she believes that the box is filled with. The child is then shown that the content of the box is crayons, as opposed to pastilles, and is asked what he/she believes that the subsequent child completing the test will believe that the box comprises.

ToM 1 and ToM 2 were merged together into one scale (ToM) and converted into a dichotomous variable in this study, wherein low scores indicate poor ToM ability and high score indicate good ToM ability. The scores ranged from 1-3.

Reliability and validity. A reliability analysis illustrated high reliability between ToM 1 and ToM 2 ($\alpha=.64$). Furthermore, the bivariate correlation analysis in table 3 reveal that ToM correlate moderately with the presumed related components of the children's age ($r=.30$, $p<0.01$), as well as both the parents' and teachers' language evaluations ($r=.35$, $p<0.01$; $r=.45$, $p<0.01$). This demonstrates good concept validity regarding peer nominations of young children's ToM abilities.

Language Measures

Expressive language assessed by the parents and the teachers. The children's expressive language was measured by means of the parents' and the teachers' evaluations on six statements retrieved from an instrument aimed at determining how well the child speaks (Dale, Price, Bishop, & Plomin, 2003). The statements comprised: "not speaking yet", "speaking, but cannot be understood", "speaks in one-word sentences", "speaks in 2-3 word sentences", "speaks in almost full sentences", and "speaks in long, compound sentences". These were furthermore merged into a 6-point ordinal scale in which 1 indicate the weakest language ability, and 6 indicate the strongest language ability.

Reliability and validity. A reliability analysis of the parents' and the teachers' combined evaluations of expressive language revealed high inter-rater reliability ($\alpha=.88$).

Similarly, the bivariate correlation analysis in table 3 establish a strong relation between the adults' language measures ($r=.69$, $p<0.01$). The children's age is shown to correlate strongly with both the parents' and the teachers' language evaluations ($r=.56$, $p<0.01$; $r=.58$, $p<0.01$). These findings signify that the adults' evaluations are valid for measuring kindergarten children's language skills.

Additional variables

The children's gender and age were included in the present study in reflection of their expected moderation effects upon the link between perceived popularity and aggression.

Gender was coded so that girls=0 and boys=1. Age was indicated in the form of how many years old.

Preliminary analysis

Introductory wise, all the respective variables investigated in this study were characterized by means of descriptive statistics.

Table 1.

Summary of the respective variables at T1

	Girls	Boys	Min.	Max.	Mean	Std. Deviation	Skewness		Kurtosis	
	Stat.	Stat.	Stat.	Stat.	Stat.	Stat.	Stat.	Std. Error	Stat.	Std. Error
Popularity	292	266	0.0	8.0	2.1	1.7	0.7	0.1	0.0	0.2
Relational aggression										
Child	292	266	0.0	15.0	1.3	1.8	2.7	0.1	12.5	0.2
Parent	283	254	6.0	13.0	7.0	1.1	1.5	0.1	3.3	0.2
Teacher	239	216	5.0	14.0	5.7	1.2	2.7	0.1	8.9	0.2
Overt aggression										
Child	292	266	0.0	10.0	1.0	1.6	2.7	0.1	9.2	0.2
Parent	271	252	8.0	20.0	9.3	1.8	2.0	0.1	5.7	0.2
Teacher	236	217	8.0	24.0	9.5	2.7	2.6	0.1	8.0	0.2
Language										
Parent	299	269	1.0	6.0	5.6	0.9	-3.0	0.1	9.1	0.2
Teacher	243	225	1.0	6.0	5.5	1.1	-2.4	0.1	5.4	0.2
ToM	292	266	0.0	4.0	1.7	1.3	0.1	0.1	-1.0	0.2
Prosocial skills										
Child	292	266	0.0	15.0	2.5	2.5	1.4	0.1	2.5	0.2
Parent	290	258	6.0	15.0	11.9	1.8	-0.1	0.1	-0.5	0.2
Teacher	241	218	5.0	15.0	11.4	2.3	-0.1	0.1	-0.4	0.2
Age (years)	4.4	4.3	-4.0	7.0	4.4	1.3	-0.4	0.1	-0.6	0.2

N is based upon the cases for which the children's age and gender were given. All other cases were excluded as they were inadequate with respect to the focus of this study.

Table 1 illustrates that the children's age ranged from -4.0 to 7.0. In reflection of only one child (id 172) being 7 years old, 9 children being 1 years old, and one child erroneously

being depicted as -4 years old (id 499), the variable was coded so that solely the children aged 2-6 years ($2000 \geq \text{age} \leq 2004$) were included in succeeding analysis. The majority of the children were 4-6 years old (75, 2%). A few more girls (53%) than boys (47%) were present in the current sample.

Linearity, homoscedasticity, normality, and multicollinearity. All analyses in this study presume linearity between the X and the Y variables. Linearity and homoscedasticity of all respective continuous variables were investigated by means of descriptive statistics and scatterplots. This revealed non-linearity for most variables, with the exception of ToM and the parents' and teachers' evaluations of prosocial skills.

Furthermore, the normality of the respective variables was assessed by means of histograms and box-plots, as well as skewness- and kurtosis measures (Field, 2009). This revealed significant outliers and/or extreme points for all variables, except ToM. An illustration is depicted in figure 4.

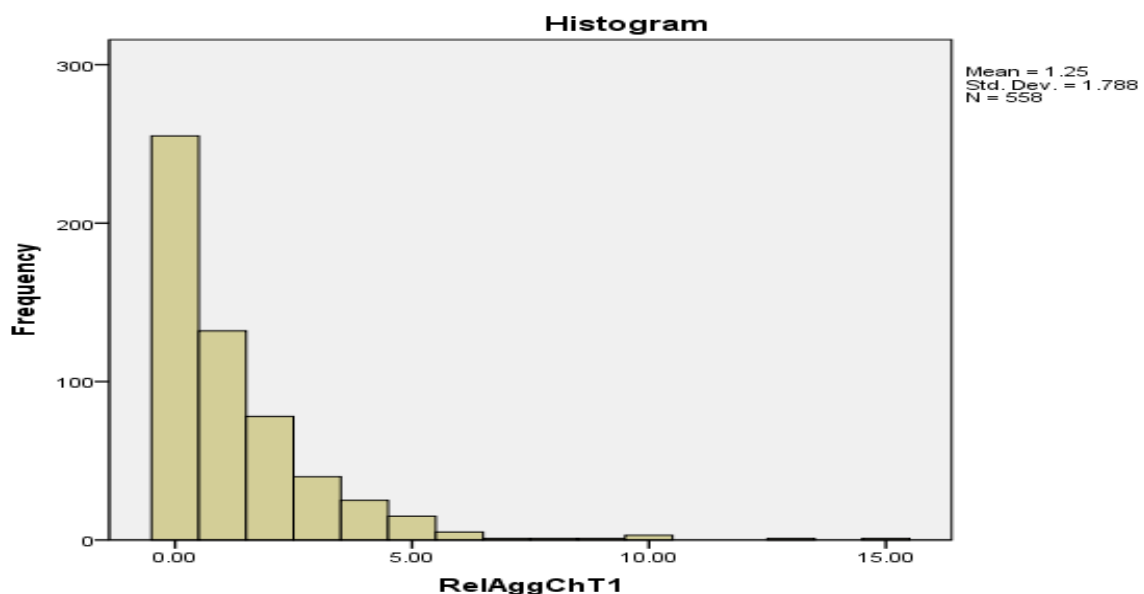


Figure 4. Histogram depicting the children's relational aggression measure.

As a result of outliers and extreme points influencing the results of the intended statistical analysis, it was decided to remove all cases ± 3 standard deviations for all respective variables. Additionally, all continuous variables were standardized by means of centration in order to avoid multicollinearity and for the ability of comparing diverse scales from the children, parents, and teachers, respectively.

Missing values were excluded pairwise with regards to the bivariate correlation matrixes in table 2 and table 3, and excluded listwise for all multiple regression analyses. All the respective analyses were 2-tailed. The correlation strengths were coded so that: Weak: $r = .10-.29$, Moderate: $r = .30-.49$, Strong: $r = .50-1.0$ (Cohen, 1988).

In reflection of the research questions, the following statistical analyses were carried out in this study: Pearson's bivariate correlation analyses, Baron and Kenny's (1986) moderator analyses, and path-analyses built upon multiple regression analyses. All analyses were conducted by means of PASW Statistics 18.

Results

Peer relations are typically divided into the three categories of best friendship, popularity and victimization, reflecting their functioning or adaptive significance with respect to sociocognitive development. This study investigated the relation between perceived popularity and aggression among kindergarten children, with particular focus on the diverse effects of overt and relational aggression on peer acceptance. These differences were believed to be rooted in the underlying mechanisms of the children's language, ToM, and prosocial skills, along with the children's age and gender.

All the respective variables were assembled into a path-analysis, built upon multiple regression analyses (Everitt & Dunn, 1991). This allowed for structured testing and presentation of the various relations between the variables, and it clearly outlined how certain variables uniquely contributed to the perceived popularity-aggression linkage in question.

In order to achieve a holistic perspective of the phenomenon, the initial combined measures of the three informants were supplemented by separate evaluations from the children, parents, and teachers, respectively. This created an opportunity to compare the essence of each research component from diverse perspectives and determine the underlying meanings placed upon the perceived popularity-aggression linkage by different informants. These were similarly explored by means of three path-analyses.

Combined Informant Approach

Results from the correlation matrix

Table 2.

*Bivariate correlation matrix (Pearson's r) representing all the respective variables at T1:
Combined measures*

	1.	2.	3.	4.	5.	6.	7.	8.
1. Age (in years)								
2. Gender	-.05							
3. Perceived popularity	.18**	.07						
4. Relational aggression	.09	.06	.12*					
5. Overt aggression	.08	.09	.04	.56**				
6. Prosocial skills	.27**	-.22**	.29**	-.08	-.22**			
7. ToM	.15**	-.02	.19**	.14*	.11	.10		
8. Language	.31**	-.11*	.15**	.08	.01	.23**	.30**	

** $p < 0.01$ level, * $p < 0.05$ level

Perceived popularity and aggression. The bivariate correlation matrix (table 2) indicates a strong positive correlation between relational and overt aggression. In contrast, there is only found to be a weak positive correlation between perceived popularity and relational aggression, and no correlation between perceived popularity and overt aggression.

Language, TOM, and prosocial skills. Table 2 demonstrates weak-moderate positive correlations between perceived popularity and prosocial skills. Furthermore, weak positive correlations were found between perceived popularity and language, as well as perceived popularity and ToM.

With respect to aggression, a weak positive correlation was shown between relational aggression and ToM. No correlations were established between relational aggression and prosocial skills, or between relational aggression and language. This differs from overt aggression, where a weak negative correlation was found between overt aggression and prosocial skills, while no correlations were shown regarding ToM or language.

Noteworthy, moderate positive correlations were detected between language and ToM, along with weak positive correlations between language and prosocial skills. No correlations were found between ToM and prosocial skills.

Age and gender. Importantly, developmental effects are revealed in table 2 with regards to several of the respective variables. Specifically, age is seen to have a weak positive correlation with perceived popularity and ToM, a weak-moderate positive correlation with

prosocial skills, and a moderate positive correlation with language. No correlations are established between age and gender, relational aggression, or overt aggression.

Concerning the children's gender, a weak negative correlation is found regarding both prosocial skills and language. No correlations are illustrated between gender and perceived popularity, either type of aggression, or ToM.

Results from the path-analysis

The fact that all the respective variables were shown to correlate with one or more of the other variables at significant levels gives cause to pursue with further multiple regression analyses of the expected model presented in figure 1.

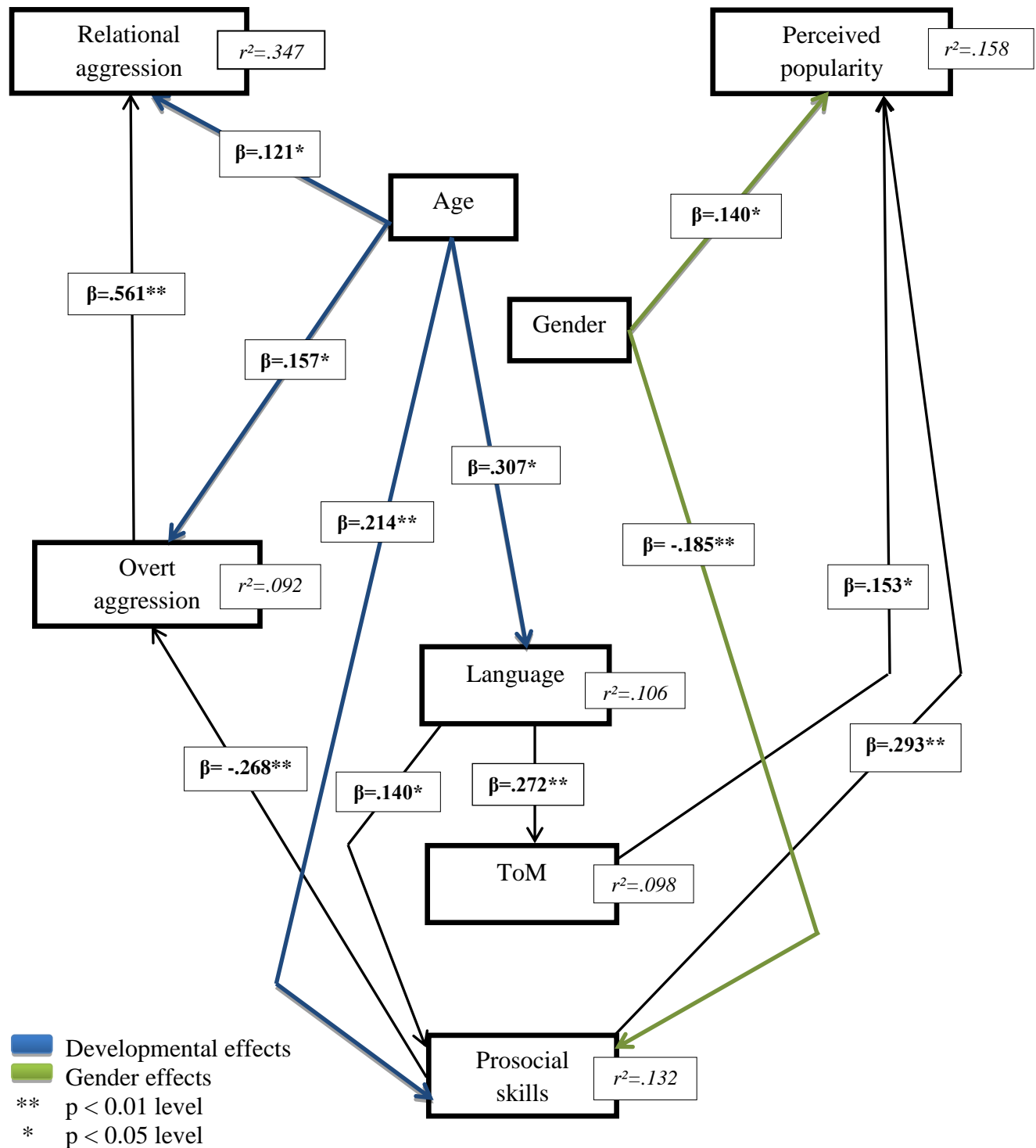


Figure 5. Main effects between the respective variables at T1: Combined measures.

In reflection of the bivariate correlations in table 2, the path-analysis (figure 5) gives a clear illustration of the unique contributions (β) that each of the respective independent variables had on the respective dependent variables at T1, when the overlapping effects of all other variables in the model were statistically removed. Furthermore, it established how much variance (r^2) in the respective dependent variables the model explains (Everitt & Dunn, 1991).

Direct effects regarding the perceived popularity-aggression model

Perceived popularity. According to the path-analysis (figure 5), there is no direct relationship between the central variables of perceived popularity and aggression. However, a strong direct positive effect between the two types of aggression was confirmed.

Other presumed underlying variables are furthermore demonstrated to be of significant importance with respect to the overarching perceived popularity-aggression linkage. Specifically, there is shown to be direct positive effects between perceived popularity and gender, ToM, and prosocial skills. No direct relations are established concerning perceived popularity and age, or perceived popularity and language.

The model is shown to explain 15.8% of the variance in perceived popularity. Perceived popularity = gender ($\beta=.14$) + ToM ($\beta=.153$) + prosocial skills ($\beta=.293$).

Aggression. The path-analysis (figure 5) illustrates a weak positive effect between overt aggression and age, in addition to a moderate negative effect between overt aggression and prosocial skills. No direct effects are found regarding overt aggression and the variables of gender, language, or ToM, respectively. With regards to relational aggression, there is established a weak positive developmental effect. No relations are revealed concerning gender, language, ToM, or prosocial skills.

The model is shown to explain 9.2% of the variance in overt aggression and 34.7% of the variance in relational aggression. Overt aggression = age ($\beta=.157$) + prosocial skills ($-.268$) and relational aggression = age ($\beta=.121$) + overt aggression ($\beta=.561$).

Prosocial skills, language, and ToM level. Figure 5 demonstrates that prosocial skills are weakly affected by language, age, and gender, the latter of which has a negative direction. Additionally, ToM is shown to be moderately positively affected by language and language appears to be moderately positively affected by age. This suggests that no relations are discovered concerning prosocial skills and ToM, ToM and gender, ToM and age, or language and gender.

The model is shown to explain 13.2% of the variance in prosocial skills, 10.6% of the variance in language, and 9.8% of the variance in ToM. Prosocial skills = gender ($\beta = -.185$) + age ($\beta = .214$) + language ($\beta = .140$), language = age ($\beta = .307$), and ToM = language ($\beta = .272$).

Interaction effects regarding the perceived popularity-aggression model

The perceived popularity-aggression linkage. Although no direct effects were established between the central variables of perceived popularity and aggression, previous research as put forth earlier gives cause to explore if any moderators affect this relationship.

It was expected that the correlation between relational aggression and perceived popularity is strengthened in reflection of increased age, while the correlation between overt aggression and perceived popularity is weakened. Hence, it was tested to see if any such developmental effects could be established.

Furthermore, it was expected to discover a positive relation between relational aggression and perceived popularity for girls, a positive relation between overt aggression and perceived popularity for boys, and vice versa. Therefore, it was tested to see if these gender effects could be verified.

The results revealed no significant moderation effects between relational aggression and perceived popularity, or between overt aggression and perceived popularity, with regards to either age or gender.

Language, ToM and prosocial skills. It was expected that the effects between language and ToM, ToM and prosocial skills, language and prosocial skills, as well as prosocial skills and relational aggression all are strengthened in reflection of increased age. Hence, it was tested to see if these developmental effects could be confirmed.

In addition, it was expected to reveal that these effects were affected by gender, so that girls would strengthen the relations between the respective variables due to earlier developmental of language, ToM, prosocial skills and, thus, relational aggression than boys. The results demonstrate no significant moderation effects regarding any of the above correlations, with regards to either age or gender.

Summary of the analyses

First and foremost, it was revealed that the path-analysis (figure 5) best explained the variance in the dependent variable of relational aggression (34.7%). This was followed by explained variance in the dependent variables of perceived popularity (15.8%), prosocial skills (13.2%), language (10.6%), ToM (9.8%), and overt aggression (9.2%), respectively. Hence, the model clearly reflected the research goal in question, and was a good fit with regards to the present study.

The results, however, differed to some extent from the expected correlations put forth in figure 1. When investigating the respective combined research measures in the model, no significant correlations were found with respect to the main hypothesis. That is, there does not seem to be any unique relationship between perceived popularity and aggression, regardless of the type of aggression in question, from a general point of view.

On the contrary, strong positive direct effects were established regarding the two types of aggression, as expected. Furthermore, moderate direct effects were revealed concerning several of the assumed underlying mechanisms with respect to the perceived popularity-aggression linkage: language and age, language and ToM, prosocial skills and perceived popularity, as well as prosocial skills and overt aggression. This verifies the proclaimed importance of the prosocial skills variable, however, not in relation to relational aggression as expected.

No moderation effects were established concerning the respective variables in the perceived popularity-aggression model regarding age and gender, respectively.

Consequently, these findings suggest that 1) the results do not seem to reflect the assumed perceived popularity-aggression pattern, or 2) the methodology utilized in relation to the current model is limited. Since the latter is testable within this study, it was considered valuable to further investigate the phenomenon from a diverse and hopefully more refined angle. This comprised analyzing and comparing the three informants' measures, as opposed to combined measures, in order to gain a holistic perspective of the perceived popularity-aggression linkage.

Multiple Informant Approach

Results from the correlation matrix

Table 3

Bivariate correlation matrix (Pearson's r) representing all the respective variables at T1. Separate measures for the children, parents, and teachers, respectively.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. Age (in years)															
2. Gender	-.03														
3. Perceived popularity	.32**	.06													
4. Rel. agg. (child)	.29**	.15**	.20**												
5. Rel. agg. (parent)	.10*	-.02	.05	.11*											
6. Rel. agg. (teacher)	.02	.00	-.13**	.12*	.22**										
7. Overt agg. (child)	.14**	.19**	.07	.59**	.08	.14**									
8. Overt agg. (parent)	.01	.09	-.03	.20**	.30**	.25**	.20**								
9. Overt agg. (teacher)	.07	.14**	-.04	.29**	.12*	.46**	.30**	.23**							
10. Language (parent)	.56**	-.06	.20**	.12**	.04	-.01	.05	.03	.06						
11. Language (teacher)	.58**	-.02	.23**	.19**	.06	-.04	.08	.03	.03	.69**					
12. ToM	.30**	-.00	.25**	.16**	.05	.01	.09*	.09*	.07	.35**	.45**				
13. Pro. skills (child)	.42**	-.03	.49**	.32**	.06	-.11*	.17**	-.02	-.02	.20**	.24**	.20**			
14. Pro. skills (parent)	.22**	-.12**	.06	-.04	.03	.05	-.03	-.13**	.01	.13**	.17**	.04	.01		
15. Pro. skills (teacher)	.21**	-.17**	.21**	-.16**	-.04	-.27**	-.21**	-.18**	-.33**	.18**	.29**	.14**	.11*	.11*	

** p < 0.01 level, * p < 0.05 level

The perceived popularity-aggression link. The bivariate correlation matrix (table 3) indicates weak correlations between perceived popularity and relational aggression, both with regards to the children's and the teacher's measures. Noteworthy, whereas this correlation is shown to be positive concerning the children's evaluation, it is negative regarding the teacher's evaluation. No correlation was found concerning the parent's measure.

Furthermore, table 3 reveals no correlations between perceived popularity and overt aggression, regardless of the informant in question.

Perceived popularity and presumed underlying variables. A moderate-strong positive correlation between perceived popularity and prosocial skills was confirmed, regarding the children's measure. Moreover, a weak positive correlation was found regarding the equivalent teachers' variables. No correlations were established concerning the parents' evaluations.

In addition, weak positive correlations were revealed in relation to perceived popularity and language, both with regards to the parents' and teachers' evaluations. Perceived popularity and ToM were seen to correlate weakly in a positive direction.

Aggression and presumed underlying variables. According to table 3, there is a moderate-strong positive correlation between relational and overt aggression as expected, regardless of the informant in question.

Moreover, relational aggression concerning the children's measure is weakly positively correlated with both the parents' and teachers' language measures, as well as ToM. Similarly, the children's and teachers' evaluations correlated positively at a moderate level with prosocial skills, respectively. Nonetheless, while this correlation was positive in relation to the former, it was found to be negative concerning the latter. No further significant correlations were confirmed in relation to the parents' and teachers' relational aggression measures.

With respect to overt aggression, it was established that the children's and parents' measures had a weak correlation with prosocial skills, while the teachers' measures correlated moderately. Whereas this correlation was shown to be positive concerning the former, it was negative regarding the two latter. No significant correlations were revealed in relation to overt aggression and the variables of language or ToM, regardless of the informant reflected.

Language, ToM, and prosocial skills. Table 3 demonstrates that both the parents' and teachers' language measures have a moderate positive correlation with ToM, in addition to weak positive correlations with the informants' prosocial skills evaluations, respective.

In addition, ToM is shown to correlate weakly in a positive direction with both the children's and teachers' prosocial skills measures. This correlation was not found to be significant regarding the parents' measure.

Age. The bivariate correlation matrix (table 3) illustrates weak-moderate positive developmental effects with regards to the central variables of perceived popularity, relational aggression and overt aggression, respectively. However, this only applied to the children's and parents' relational aggression measures, and the children's overt aggression measure.

Furthermore, strong positive developmental effects were discovered concerning the parents' and the teachers' language evaluations, as well as weak-moderate positive correlations regarding ToM and all three prosocial skills measures.

Gender. According to table 3, weak positive gender effects were evident in relation to the central variables of relational and overt aggression, however, only in relation to the children's measures regarding the former and the children's and teachers' measures concerning the latter.

Weak negative gender effects were revealed in relation to the parents' and teachers' prosocial skills measures. This correlation was not discovered concerning the children's prosocial skills evaluation.

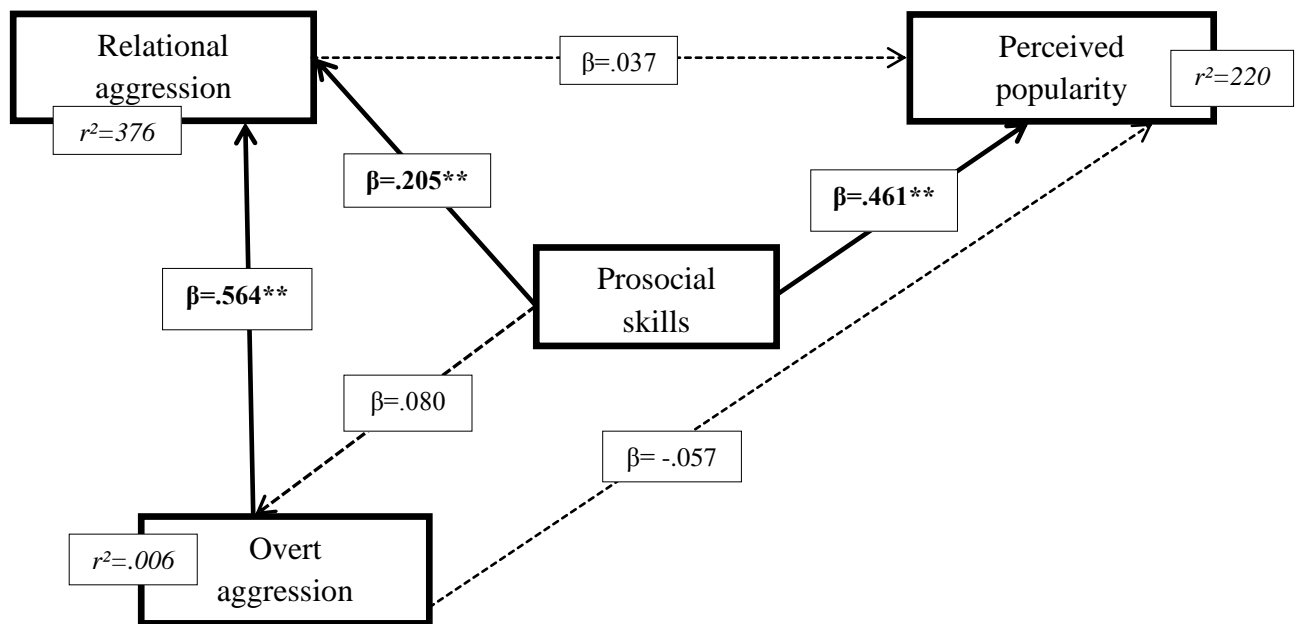
No significant correlations were found between gender and the variables of perceived popularity, language, and ToM.

Results from the path-analyses

Comparable to the combined variables (table 2), all the respective variables regarding the separate informants in table 3 were shown to correlate with one or more of the other variables at significant levels. However, as the objective of the following analyses were to establish whether analyzing and comparing the three informants' measures, as opposed to combined measures, would be an advanced methodology in the quest of understanding the perceived popularity-aggression linkage, only central variables were included as means of simplicity.

Again, several multiple aggression analyses were conducted in order to establish the unique contributions (β) and explained variances (r^2) that each of the respective independent

variables had on the respective dependent variables (Everitt & Dunn, 1991). The results are clearly illustrated by means of the three diverse path-analyses below.



** $p < 0.01$ level, * $p < 0.05$ level

Figure 6. Main effects between the respective variables at T1: Children as informants.

Perceived popularity. According to figure 6, there are weak but not significant positive direct effects with regards to the main variables of perceived popularity and aggression, from the children's point of view. The slight effects are considered coincidental and will not be discussed any further.

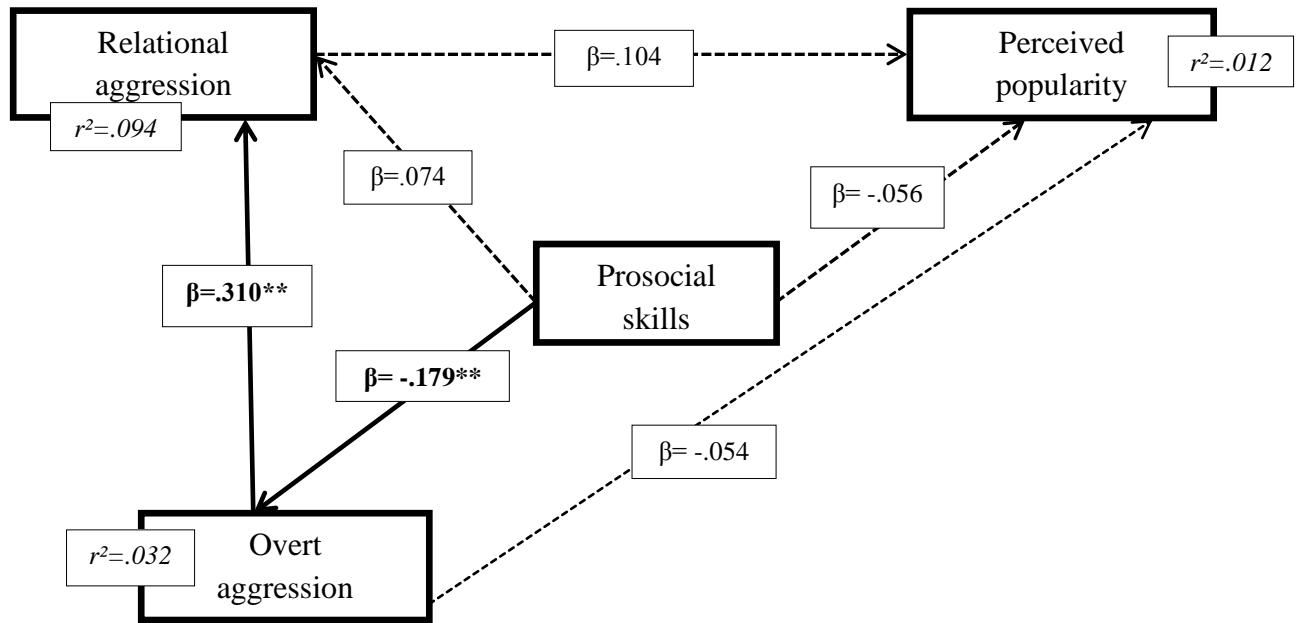
In contrast, prosocial skills are illustrated to have a substantial positive direct effect on perceived popularity as expected. The effect is revealed to be the strongest among the three diverse informants in question.

The model is shown to explain 22% of the variance in perceived popularity. Perceived popularity = relational aggression ($\beta=.037$) + overt aggression ($\beta=-.057$) + prosocial skills ($\beta=.461$).

Aggression. Figure 6 demonstrates that the two types of aggression have a strong positive direct effect, assessed from the children's perspective. Again, this effect is discovered to be the strongest among the compared informants.

The model is shown to explain 37.6% and 0.6% of the variance in relational and overt aggression, respectively. Relational aggression = overt aggression ($\beta=.564$) + prosocial skills ($\beta=.205$) and overt aggression = prosocial skills ($\beta=.080$).

Prosocial skills. The path-analysis (figure 6) establishes a substantial positive direct effect between relational aggression and prosocial skills, while the direct effect between overt aggression and prosocial skills appears trivial. This highlights how essential the acquirement of prosocial skills may be with regards to the ability of performing relational aggression among young children.



** $p < 0.01$ level, * $p < 0.05$ level

Figure 7. Main effects between the respective variables at T1: Parents as informants.

Perceived popularity. The parents' evaluations (figure 7) establish the expected pattern of a positive direct effect regarding perceived popularity and relational aggression, and a negative direct effect with respect to perceived popularity and overt aggression. However, the effects are considered coincidental and will not be discussed in any further detail.

Surprisingly, the effect between perceived popularity and prosocial skills is found to be trivial and will not be examined any further.

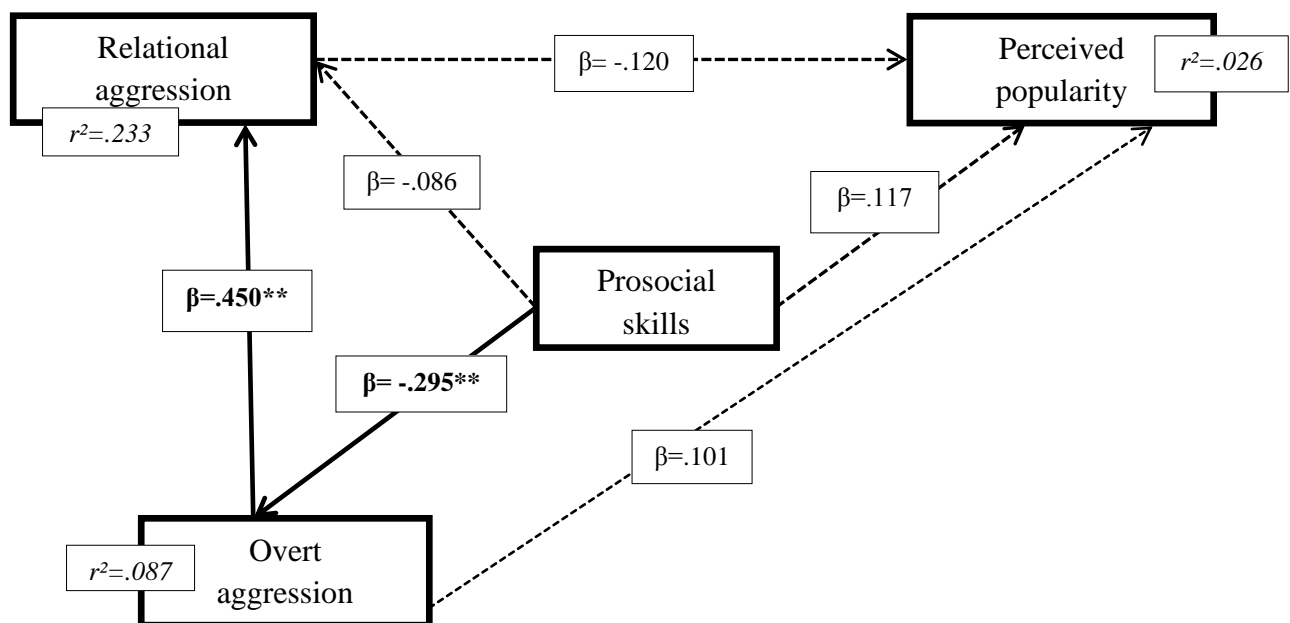
The model is shown to explain 1.2% of the variance in perceived popularity. Perceived popularity = relational aggression ($\beta=.104$) + overt aggression ($\beta=-.054$) + prosocial skills ($\beta=-.056$).

Aggression. According to figure 7, the direct effect between the two types of aggression is positive and moderate. The effect is substantially weaker regarding the parents' measures than that of both the children's and the teachers' measures, the latter which will be discovered.

The model is shown to explain 9.4% and 3.2% of the variance in relational and overt aggression, respectively. Relational aggression = overt aggression ($\beta=.310$) + prosocial skills ($\beta=.074$) and overt aggression = prosocial skills ($\beta=-.179$).

Prosocial skills. Figure 7 demonstrates a negative weak direct effect between overt aggression and prosocial skills, while the direct effect regarding relational aggression and prosocial skills appears trivial.

Interestingly, this illustrates how the contribution of prosocial skills is shown to vary significantly regarding the informant in question. Whereas the children may view prosocial skills to be essential regarding the enactment of relational aggression, the same may be true from the parents' perspective regarding overt aggression.



** $p < 0.01$ level, * $p < 0.05$ level

Figure 8. Main effects between the respective variables at T1: Teachers as informants.

Perceived popularity. Most unexpected, the path-analysis (figure 8) reveals the pattern of a negative direct effect regarding perceived popularity and relational aggression, and a positive direct effect with respect to perceived popularity and overt aggression. This suggests that the teachers have a differing perspective on the perceived popularity-aggression linkage than both the children and the parents. The effects, however, are considered coincidental and will not be discussed further.

The direct effect between perceived popularity and prosocial skills is positive as expected, but weak and not significant.

The model is shown to explain 2.6% of the variance in perceived popularity. Perceived popularity = relational aggression ($\beta = -.120$) + overt aggression ($\beta = .101$) + prosocial skills ($\beta = .117$).

Aggression. Figure 8 reveals a strong positive direct effect between the two types of aggression as expected. The model is shown to explain 23.3% and 8.7% of the variance in relational and overt aggression, respectively. Relational aggression = overt aggression ($\beta = .450$) + prosocial skills ($\beta = -.086$) and overt aggression = prosocial skills ($\beta = -.295$).

Prosocial skills. The path-analysis (figure 8) establishes a negative, moderate direct effect between prosocial skills and overt aggression. The direct effect between prosocial skills and relational aggression, however, is shown to be trivial. This reflects the parents' measures, but contradicts the children's measures, as already mentioned.

Summary of the analyses

In support of the main model (figure 5), the three separate path-analyses consistently demonstrate no direct effects between aggression and perceived popularity. All informants agree that overt aggression affects relational aggression directly in a positive direction. However, the strength of this effect varies significantly ranging from $\beta = .564$ to $\beta = .310$, where the children reveal the strongest effect and the parents the weakest.

Interestingly, prosocial skills are seen to have a direct positive effect on relational aggression according to the children as expected, but no direct effect in reflection of the parents' and teachers' perspectives. Furthermore, whereas no direct effect is found between prosocial skills and overt aggression regarding the children's measures, both the parents and the teachers report a negative direct effect as presumed. This suggests that the children view altruistic behavior to be essential with respect to the enactment of relational aggression, but do not see any importance of these social abilities regarding overtly aggressive acts. In contrast, it seems that adults believe that good prosocial skills reduce overt aggression, and vice versa, but do not equate such abilities with a relationally aggressive behavioral style. Surprisingly, there is no indication of any direct effect between prosocial skills and perceived popularity according to the parents and teachers. The children, however, seem to view altruistic behavior as important with respect to reputation and acceptance among peers.

The children's model of the perceived popularity-aggression linkage is demonstrated to explain the largest variance regarding perceived popularity (22%) and relational aggression (37.6%), while the teachers' model is shown to explain the largest variance with respect to

overt aggression (8.7%). The parents' model is found to be trivial concerning the perceived popularity-aggression phenomenon.

Discussion

This study examines whether certain aggressive kindergarten children aged 2-6 years within a normal population are perceived as popular among peers. Previous research illustrates that children who enact relational aggression typically achieve favorable reputations and power within their social networks, while those who overtly aggress are at risk of becoming rejected. Relational aggression has been found to correspond with advanced sociocognitive abilities associated with older age and girls particularly, whereas overt aggression has been related to limited social understanding, lack of self-control, younger age, and a behavioral style normative for boys primarily. It was solely expected to find a positive direct effect regarding relational aggression and perceived popularity, and that the individual characteristics of age, gender, language, ToM, and prosocial skills would contribute to this linkage indirectly, the latter predominantly. Results reveal that the combined informant approach suppresses essential effects within the perceived popularity-aggression model and that a multiple informant approach is essential with regards to capturing the underlying mechanisms associated with this complex phenomenon. An inspection of the three path-analyses demonstrates that the children's evaluations may be superior in reflecting the lived realities of perceived popular aggressors in kindergarten, while the parents' perceptions may be trivial.

Why Is the Direct Relation between Aggression and Perceived Popularity Insignificant?

The results indicate no direct effect between the central variables of perceived popularity and aggression, regardless of the type of aggression or research approach in question. This suggests that aggressive behavior does not enhance nor diminish children's reputation within the peer group, irrespective of the disruptive acts performed. Furthermore, the finding proposes that other underlying mechanisms related to the perceived popularity-aggression linkage have a stronger and more dominant effect than what is found between perceived popularity and aggression directly.

The essence of prosocial skills. Children's prosocial skills are illustrated to contribute significantly to this relation in the present study. Not only are prosocial skills demonstrated to affect peer status directly, but it also affects both overt and relational aggression, which

reinforces the validity of the findings. Importantly, however, these effects are shown to vary depending on the informant in question, and must necessarily be explored.

Children as informants. In reflection of the children's measures, prosocial skills are seen to have a direct positive effect on both perceived popularity and the display of relational aggression, supporting the overarching idea that children's status among peers are rooted in a fine balance between the two contrasting characteristic. This suggests that perceived popular aggressors both are able and willing to manipulate and hurt others within their closest network, however not enough to terminate the friendship (Crick & Grotpeter, 1996; Salmivalli & Nieminen, 2002). The finding not only supports previous research concerning the enactment of altruistic behavior among young children (e.g. Greve 2009; Whaley & Rubenstein, 1994; Eisenberg, 2010; Batson, 2010), but it reveals that also the advanced sociocognitive abilities related to relational aggression may be present at an earlier age than previously assumed.

This may be related to the social context of kindergarten, where children have access to same-aged peers and are freely able to choose who they want to befriend (Borge & Natvig, 2008). It is possible that the social network these children accumulate with time fosters both the ability and motivation to act altruistic towards others. This, in turn, may lead to social acceptance, the availability of social interactions, and opportunities for learning and practicing prosocial skills, reflecting a positive spiral between friendships and sociocognitive abilities (Greve, 2009; LaFontana & Cillessen, 2002).

On the other hand, the significantly strong positive effect between relational and overt aggression ($\beta=.564^{**}$) evaluated from the children's point of view, implies that the two types of aggression to a significant extent may be determined by the same genetic dispositions (Brendgen et al., 2006). Hence, the children's overt and relational aggression evaluations may in fact measure components of the same phenomenon. This suggests that what seems like a direct effect between relational aggression and prosocial skills in reality might reflect the effects regarding overt aggression and prosocial skills due to the children's young age and perception of aggression. This supports the idea that overt aggression is likely to be the springboard for which children develop indirect forms of aggression, which requires more advanced sociocognitive skills (Björkqvist et al., 1992; Little et al., 2003).

Furthermore, the finding that prosocial skills directly affect children's peer status positively suggests that altruistic abilities are important with respect to reputation for children within the current age group. However, the strong effect ($\beta=.461^{**}$) between the two propose

that perceived popularity and prosocial skills may share certain characteristics so that both, for instance, measure how well liked or accepted the children are perceived. This signifies that the direct effect between prosocial skills and aggression reflects a relationship between perceived popularity and aggression, as expected.

Taken together, the results from the children's measures reveal that 1) prosocial skills mediate the relationship between perceived popularity and aggression as expected, 2) the young age of the present sample makes it difficult to attribute the underlying meaning of aggression so that prosocial skills may mediate an association between perceived popularity and overt aggression, reflecting an age-appropriate reactive aggression style, 3) the concept of prosocial skills may be interpreted as perceived popularity by young children so that what is found is really a direct effect between perceived popularity and aggression as expected.

Parents and teachers as informants. The facet of prosocial skills is demonstrated to be a key factor with respect to the perceived popularity-aggression phenomenon from both the parents' and teachers' perspectives. In contrast to the children's measures, the adults report a negative direct effect between prosocial skills and overt aggression, as presumed. This supports the idea that overtly aggressive children may have poor sociocognitive abilities (i.e. do not understand others' needs, do not relate altruism with positivity, have limited language skills), lack self-control, and may display angry outbursts (Rose et al., 2004; Rose & Swenson, 2009; Little et al., 2003; Brendgen et al., 2006; Salmivalli & Nieminen, 2002) in response to environmental challenges when no better alternative is available. For these reasons, it is possible that overtly aggressive children are rejected by peers, which in turn, limits crucial learning experiences that are associated with peer interaction and friendships, including the acquirement of prosocial skills. If these children furthermore acquire low self-esteem and low self-efficacy, it may lead to a negative spiral that is challenging to modify.

These findings reflect the evolutionary psychological perspective of human behavior which proposes that aggression is an adaptive strategy in response to context-specific conditions (Buss & Shackelford, 1997), such as peer difficulties and punitive parenting (Dodge, 1991). Similarly, it supports the cognitive-ecological psychological perspective of aggression by that overtly aggressive children may interpret and respond to sociocognitive constraints in an "if-then" relationship (Guerra & Huesmann, 2004). Subsequently, the acquirement of an aggressive behavioral style must necessarily be viewed from an ecological perspective, reflecting both internal and external factors.

Surprisingly, the parents' and teachers' measures do not indicate significance regarding prosocial skills and perceived popularity. One reason may be that adults do not contribute altruistic behavior to children within this young age-group. This may be explained by the fact that much of the socialization between children occur in situations outside of adult supervision, and thus, may be underreported.

Another implication is that children perceive altruism differently than adults do. Research suggests that young children communicate and interact through non-verbal means, such as humor, laughter and joy (Løkken, 2000; Michelsen, 2004; Johansson, 1999; Greve, 2009). Hence, the children's and adults' evaluations might measure diverse phenomena that may not be comparable. This idea is strengthened by the fact that children are tested with regards to the areas of helping, comforting and sharing, respectively, and the adults respond to questions including consideration and kindness. In addition, whereas prosocial skills solely concern peer relation regarding child informants, this encompasses relations with both peers and adults with regards to the adult informants.

Language and ToM. Results from the main model (figure 6) reveal that the presumed underlying mechanisms of language and ToM do not affect the perceived popularity-aggression linkage directly. It is possible that language has an indirect positive effect on this relation through its effect on prosocial skills that is related to both aggression and peer status, as explained. Language level is also seen to positively affect ToM, but this may be irrelevant to the enactment of aggression, as ToM is correlated directly with perceived popularity but not aggression.

This may be explained by the combined informant approach, which seems to suppress essential relations between variables as already explored. Further inspection of the diverse informant's perspectives on the unique contribution of language concerning the perceived popularity-aggression model could possibly reveal stronger effects.

Another interpretation may be that language within the present sample is represented in the form of non-verbal communication such as body language and gestures (Løkken, 2000; Michelsen, 2004; Johansson, 1999; Greve, 2009), as opposed to expressive language. This suggests that the language component may be undervalued and it would be interesting to explore whether interaction through play, for instance, would display alternative findings. This highlights the significance of *imitation* in the communication between young children with respect to interpretation of others' behaviors, the formation of normative standards, and

as a means of guiding their own behavior (Rayna, 2001; Vygotsky, 1978; Williams, 2001; Bandura & Walters, 1963).

The finding that language moderately affects ToM strengthens the idea that young children understand each other's lived worlds through age-specific communication. Furthermore, ToM is shown to be irrelevant with regards to the enactment of aggression and only weakly affect children's peer status, suggesting that children within the present age-group are too young to have developed these advanced sociocognitive skills. Again, another possibility is that the presented combined informant approach is unfortunate with respect to capturing the contribution of ToM with regards to the respective variables in the model.

Age. The combined informant approach illustrate that the children's age directly affects aggression, language and prosocial skills in a positive direction as expected. This suggests that these abilities are likely to improve in reflection of the children's development. Surprisingly, the effect between age and overt aggression is shown to be positive, not negative as predicted, which may be rooted in the fact that the sample contains very young children that primarily utilize this form for aggression. This may support Björkqvist et al.'s (1992) theory that the development of aggression typically should progress from direct to verbal to indirect aggression in reflection of the children's sociocognitive abilities, maturation, and age. Furthermore, it reflects Buss and Shackelford's (1997) evolutionary psychological perspective of human behavior whereby diverse forms of aggression may be interpreted as adaptive social strategies that advance with increased age. These propositions must necessarily be studied within a longitudinal design in order to evaluate children's patterns of aggression over time and a split-age design could potentially reveal differences within the current sample.

Age is not shown to contribute to the children's peer status and ToM directly; however, it seems to have an indirect positive effect on ToM through language level, which in turn is weakly associated with perceived popularity, as already discussed. This suggests that developmental effects are only relevant with regards to the perceived popularity-aggression model by that its normative increase in children's language level may be the building block for more advanced sociocognitive abilities and social relations.

Gender. The main model (figure 6) demonstrates that the children's gender has a direct positive effect on prosocial skills and perceived popularity, as expected. Specifically, girls are seen to have a weak positive effect on prosocial skills, and boys are shown to have a weak positive effect on peer status. It may furthermore be that children's prosocial skills

contribute to indirect gender effects on children's display of aggression, which already was discussed to reflect children's language level.

This supports previous research which illustrates that girls have more advanced interpersonal abilities, cue sensitivity, peer perception accuracy and status awareness than boys (Little et al., 2003), and that they typically develop, at least verbally, faster than the other gender (Björkqvist et al., 1992). Furthermore, it strengthens studies that reveal generally higher levels of relational aggression among girls and higher levels of overt aggression among boys (Crick & Grotpeter, 1995; Björkqvist et al., 1992, Coie et al., 1982), reflecting Guerra and Huesmann's (2004) cognitive-ecological model of aggression. Surprisingly, ToM is found to be irrelevant with respect to gender. This indicates that the combined informant approach may suppresses such effects or possibly that ToM is not yet developed among this age-group.

The finding that boys uniquely affect peer status indicates that the two genders represent diverse peer cultures in which they negotiate status in reflection of the group's normative standards (Kochenderfer & Ladd, 1997) so that boys may have a particular emphasis on reputation and power within the peer group. This supports Rose and Rudolph's (2006) proposal that girls generally value relationship-preservation goals, whereas boys particularly accentuate status-oriented goals.

Another explanation may be that boys and girls typically belong to peer groups of different sizes. Whereas boys mostly form rather big and loose groups, girls are found to form smaller and tighter cliques and best friendships (Lagerspetz et al., 1988). It is possible that boys potentially gain more nominations than girls based on their group structure, which may skew the findings. This supports LaFontana and Cillessen (2002) idea that perceived popularity primarily is a function of social impact and visibility rather than likeability.

Additional factors. In supplement of internal characteristics that may affect the perceived popularity-aggression model, it is possible that the external environment influences both the enactment of aggression and how well liked or accepted young children are among peers.

The children within this study attended kindergartens of diverse types, including small and large public kindergartens, as well as privately run family-based and nature kindergartens. It is possible that the size and structures of the kindergarten affects children's sociocognitive abilities, peer relations, and normative standards differently, so that they may not necessarily be comparable.

Another influence may be the amount of time the children have spent in kindergarten. This may affect their sense of belongingness and security, motivation to befriend others, and as a consequence, interpersonal abilities such as language, ToM, and prosocial skills. It is possible that children who have attended the respective kindergarten for several years may behave rather differently than newcomers.

Furthermore, the rules, norms, and values emphasized within the diverse kindergartens may affect the children's attitudes differently, so that the threshold for behaving aggressively is likely to vary. This reflects the unique combinations of the teachers' regulation, children's temperaments, composition of children, and the parents' influence on their children, among others, found within the respective kindergartens.

Surprising Results

The most surprising finding within this study was the diversities between the informants' perspectives, particularly concerning the parents and the teachers, on the contribution of prosocial skills with regards to the perceived popularity-aggression linkage. The adults filled-out identical questionnaires regarding perceived popularity, aggression, and prosocial skills, suggesting that the gap is not primarily rooted in measurement issues. A better understanding may be that the two groups of adult informants associate the respective research components with various phenomena, indicating that they differ regarding the underlying meanings. For instance, prosocial skills from the parents' point of view may attribute how well the children relate to their siblings and how well behaved they are at home, while the teachers identify the concept with children's peer interactions and abilities to follow rules within the kindergarten setting. Likewise, it is important to consider that the children themselves behave differently in relation to their two attachment figures, so that the parents and the teachers possibly would share perspectives if they were placed in each other's situation.

In relation to this was the surprising finding of exceptionally weak explained variances regarding the parents' evaluations on perceived popularity (1.2%), relational aggression (9.4%), and overt aggression (3.2%), illustrated in figure 8. Again, this suggests that the questionnaire items chosen for this particular study did not capture the intended phenomena. The fact that participation was voluntarily should rule out reluctance to reply openly.

A noteworthy finding is the low reliability ($\alpha=.31$) concerning the parents' evaluations on relational aggression. This emphasizes within-group diversities, and that the concept is difficult to define. However, the high reliability ($\alpha=.71$) and yet weak explained variance

regarding the overt aggression demonstrates how the parents' perspective in relation to the perceived popularity-aggression phenomenon is in specific need of further clarification. One proposal is that the aggression level among the present sample generally is low, reflecting a group of well-functioning children. Hence, it would be interesting to compare these findings with clinical studies of ADHD children to see if any differences would appear.

Why Believe in the Findings?

This study was based upon data from the MMF project which maintains a large sample of children and the data was collected by means of age-relevant and internationally recognized procedures reflecting diverse social, cognitive, emotional, and behavioral characteristics, such as *the Bus Trip* based upon peer nominations (Perren & Alsaker, 2006). This suggests that the findings are likely to reflect a realistic pattern of what the perceived popularity-aggression linkage encompasses, although causality may not be stated.

Significantly, a multiple informant approach whereby the measures from the children, parent, and teacher, respectively, are investigated, strengthens the validity of the findings. It is valuable to compare the evaluations presented by the children's key attachment figures of the parents and teachers, as they both observe children in unique situations within the home and kindergarten, respectively, and seem to contribute diverse meanings to the children's characteristics. Additionally, it is vital to obtain first-hand information from the children themselves, reflecting a *bottom-up perspective*. This allows the children to put forth their own lived realities, which is revealed to differ significantly from that of adults' points of view about the acquirement of peer status and social acceptance within the boundaries of kindergarten. This is not to say that adults do not understand children's perspectives, but that much of the social interactions that children have with peers takes place within unattended circumstances and young children communicate by other means than adults.

The utilization of path-analyses in this study creates an opportunity for testing the unique contributions of each respective independent variable within the model, by statistically removing the overlapping effects of all other variables (Everitt & Dunn, 1991). The result is a holistic understanding on the lived realities of perceived popular aggressors in kindergarten that otherwise might have remained undiscovered.

Limitations and Future Directives

Sample and generalizability. The present study is uniquely based upon children attending kindergartens within the semi-rural municipalities of Gran and Lunner at Hadeland,

Norway. This sample selection poses the question as to whether the findings are generalizable with regards to other areas within the country such as larger cities, because the ethnic composition and social context may be diverse. Similarly, it is questionable whether the results generalize to other countries with respect to differing cultures, norms and values, as well as different legislations with respect to daycare. This suggests that a cross-cultural design could reveal diverse findings than that of the present study.

It is furthermore possible that children who attend kindergarten are different from those who, for instance, stay at home with a parent, regarding the accessibility of potential friends, belonging to a peer group in which ones reputation is developed, the acquirement of sociocognitive skills, and the imitation of others, to name a few.

Additionally, this study solely included the individuals who consented to participate due to ethical concerns. This indicates the potential of self-selection bias, whereby individuals who did not participate systematically may differ from those who consented (Heckman, 1979).

Measurement and construct validity. Another shortcoming concerning this study is the cross-sectional design. Whereas this design allows for the investigation of relationships and patterns between naturally-occurring variables, it does not state causal effects (Field, 2009). This suggests that the directionality of the present findings remains uncertain and could readily be accomplished by including the available data from T2-T4 within the MFF project. The insertion of these time periods was beyond the scope of the current study.

Similarly, there is always the possibility that the perceived popularity-aggression model is influenced by additional variables such as peer relations (e.g. best friendship) and the children's family and home environments (e.g. siblings, socioeconomic standing, parenting style, child-parent attachment, parents' psychological health, relationship status and functioning, educational level), which is in need of additional investigation.

It is furthermore a restriction that MFF does not include the nomination orders with respect to the respective children's evaluations. Regarding perceived popularity, for instance, it would be valuable to explore whether the "most popular" children differ from the other nominated children, or whether the perceived popularity construct may be considered as a whole. This might reflect hierarchal differences and individual characteristics within the same status group, which could reveal significant underpinning with respect to the perceived popularity-aggression linkage.

In relation to this, peer status within the present study is measured by means of solely positive nominations (Perren & Alsaker, 2006), which undermines the children's opinions as to whom they do not wish to take with them on the bus trip and do not admire. Research reveals that socially accepted behavior such as prosocial skills are well reflected by means of positive peer nominations, however, undesirable behavior such as aggression may better be measured by means of negative peer nominations (Coie et al, 1990). This has been avoided in MMF due to ethical reasons. Not only do parents and teachers accept the use of positive nominations easier, but it also reflects the morals taught in kindergarten about respecting and caring for others.

Another issue to consider is that the variables of prosocial skills and aggression were measured by diverse processes (nominations versus questionnaires) and aspects (peer relations versus peer and adult relations) regarding the children and adults, respectively, suggesting they reflect different phenomena that may not be comparable. With respect to prosocial skills, this is supported by a weak correlation between the children's and the teacher's measures ($r=.11^*$), and no correlation regarding the children's and the parent's measures ($r=.01$). Similarly, the relational aggression measures between the children and the teachers ($r=.12^*$), as well as the children and the parents ($r=.11^*$) are seen to be small. The overt aggression measures between the children and the teachers ($r=.30^{**}$), and the children and the parents ($r=.20^{**}$) are notably stronger and of higher significance than that of relational aggression, indicating that this type of disruptive trait is perceived as the most similar of the two, especially in relation to the children and the teachers which reach a moderate correlation (see table 3).

In addition to child interviews and adult-rated behavioral questionnaires, it could be valuable to include observational methods in future studies in order to gain first-hand information concerning the children's peer relations and behavior, which further could increase the construct validity of the findings. This, however, is typically time-consuming and expensive.

Implications

In contrast to previous research which typically have investigated schoolchildren and teenagers, this study examines kindergarten children who are in the process of forming behavioral, social, cognitive, and emotional characteristics that will influence succeeding adjustment with respect to diverse challenges in everyday life, such as peer relations. Results reveal important findings regarding children's internal and external influences, which

underlines the significance of research on aggression to focus on this young age-group. Even though the current effect sizes are relatively weak, they reveal interesting patterns regarding the perceived popularity-aggression phenomenon that may have substantial impact on the children's lived worlds. These patterns may furthermore be important with regards to prevention and intervention of aggressive behavioral styles and associated internal and external difficulties.

In their meta-analysis, Cook et al. (2010) revealed that childhood aggression is typically linked with an increased chance of developing externalizing problems (i.e. disruptiveness, argumentativeness), while aggressive adolescents are shown to be at particular risk of internalizing problems (i.e. anxiety, depression, withdrawal). This underlines how aggressive behavioral styles must be adjusted as early as possible.

Researchers stress the essence of focusing on a multilevel, ecological approach targeting the individual, the peer context, and external environments that may influence children's social cognitions and behavior choices (Cook et al., 2010; Rose et al., 2004). Particularly, concentrating on at risk children and those who already enact aggression by improving their social understanding and peer relations may prevent children from utilizing aggression as an adaptive strategy to everyday challenges.

The present study indicated that relationally aggressive perceived popular older girls may have an especially high status and influence among the peer group due to heightened sociocognitive abilities found related to both age and gender. Hence, including them in intervention programs would likely prove valuable with respect to preventing internalizing and externalizing problems both among the bullies themselves and their victims (Rose et al., 2004). Essentially, by understanding why certain children relationally aggress despite their advanced sociocognitive abilities, such as prosocial skills in particular, may be valuable with regards to prevention and intervention programs.

Conclusion

The present study revealed that aggressive behavior among kindergarten children within a normal population is irrelevant with regards to a direct effect on peer status. Prosocial skills were discovered to be a key component concerning the perceived popularity-aggression linkage, through its indirect effect on perceived popularity via aggression. Whereas the children perceived prosocial skills to have a direct positive effect regarding both perceived popularity and relational aggression, the parents and teachers evaluated prosocial skills to directly affect overt aggression negatively. Surprisingly, the parents' effect sizes were found to be trivial, suggesting they attribute diverse meanings to the perceived popularity-aggression phenomena or possibly reflect other phenomena than this study intended.

The results demonstrated positive developmental effects in relation to both types of aggression, language and prosocial skills, while no direct effects were found regarding perceived popularity and ToM. Gender differences were indicated by means of girls' unique effect on the acquirement of prosocial skills, and boys' unique effect on perceived popularity. The children's gender appeared irrelevant in relation to language and ToM.

Essentially, this study discovered that a combined informant approach seems to suppress significant effects regarding the perceived popularity-aggression model, and that the children's evaluations may be superior in capturing the components associated with enhanced reputations and power within the social network. This underlines the essence of utilizing child informants within research on peer relations among young children, and in the formation of prevention and intervention programs aimed at internalizing and externalizing challenges related to aggressive behavioral styles. An ecological approach targeting the individual, the peer culture, and the external surroundings that the children typically find themselves in may enhance our understanding of children's normative standards and behavioral repertoires.

References

- Bandura, A., & Walters, R. H. (1963). *Social learning and personality development*. New York, NY: Holt, Rinehart, & Winston.
- Batson, C. D. (2010). Empathy-induced altruistic motivation. In M. Mikulincer & P. R. Shaver (Eds.), *Prosocial motives, emotions, and behavior: The better angels of our nature* (pp. 15-34). Washington, DC: American Psychological Association.
- Batson, C. D., Sager, K., Garst, E., Kang, M., Rubchinsky, K., & Dawson, K. (1997). Is empathy-induced helping due to self-other merging? *Journal of Personality and Social Psychology*, 73, 495-509.
- Berndt, T. J., & Perry, T. B. (1986). Children's perceptions of friendships as supportive relationships. *Developmental Psychology*, 22, 640-648.
- Björkqvist, K., Lagerspetz, K. M. J., & Kaukiainen, A. (1992). Do girls manipulate and boys fight? Developmental trends in regard to direct and indirect aggression. *Aggressive Behavior*, 18, 117-127.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173-1182.
- Borge, A. I. H., & Natvig, H. S. (2008). Resiliens og vennskap blant hyperaktive og uoppmerksomme småbarn. In A. I. H. Borge (Ed.), *Resiliens i praksis: Teorier og empiri i et norsk perspektiv* (pp.145-156). Oslo, Norway: Gyldendal Akademisk.
- Brendgen, M., Vitaro, F., Boivin, M., Dionne, G., & Périus, D. (2006). Examining genetic and environmental effects on reactive versus proactive aggression. *Developmental Psychology*, 42, 1299-1312.
- Brendgen, M., Vitaro, F., Bukowski, W. M., Doyle, A. B., & Markiewicz, D. (2001). Developmental profiles of peer social preferences over the course of elementary school: Associations with trajectories of externalizing and internalizing behavior. *Developmental Psychology*, 37, 308-320.
- Bukowski, W. M. (2003). What does it mean to say that aggressive children are competent or incompetent? *Merrill-Palmer Quarterly*, 49, 390-400.
- Bukowski, W. M., Sippola, L. K., & Newcomb, A. F. (2000). Variations in patterns of attraction to same- and other-sex peers during early adolescence. *Developmental Psychology*, 36, 147-154.

- Buss, D. M., & Shackelford, T. K. (1997). Human aggression in evolutionary psychological perspective. *Clinical Psychological Review*, 17, 605-619.
- Cairns, R. B., Cairns, B. D., Neckerman, H. J., Gest, S. D., & Gariepy, J. L. (1988). Social networks and aggressive behavior: Peer support or peer rejection? *Developmental Psychology*, 24, 815-823.
- Campbell, A. (1993). *Men, women, and aggression*. New York: Basic Books.
- Cillessen, A. H. N., & Mayeux, L. (2004). From censure to reinforcement: Developmental changes in the association between aggression and social status. *Child Development*, 75, 147-163.
- Clark, K. E., & Ladd, G. W. (2000). Connectedness and autonomy support in parent-child relationships: Links to children's socioemotional orientation and peer relationships. *Developmental Psychology*, 36, 485-498.
- Cohen, J. W. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Coie, J. D., Dodge, K. A., & Coppotelli, H. (1982). Dimensions and types of social status: A cross-age perspective. *Developmental Psychology*, 18, 557-570.
- Coie, J. D., Dodge, K. A., & Kupersmidt, J. B. (1990). Peer group behavior and social status. In S. R. Asher & J. D. Coie (Eds.), *Peer rejection in childhood* (pp. 17-59). New York: Cambridge University Press.
- Cook, C. R., Williams, K. R., Guerra, N. G., Kim, T. E., & Sadek, S. (2010). Predictors of bullying and victimization in childhood and adolescence: A meta-analytic investigation. *School Psychology Quarterly*, 25, 65-83.
- Crick, N. R. (1997). Engagement in gender normative versus nonnormative forms of aggression: Links to social-psychological adjustment. *Developmental Psychology*, 33, 610-617.
- Crick, N. R., & Dodge, K. A. (1994). A review and reformulation of social information processing mechanisms in children's social adjustment. *Psychological Bulletin*, 115, 74-101.
- Crick, N. R., & Grotpeter, J. K. (1995). Relational aggression, gender, and social-psychological adjustment. *Child Development*, 66, 710-722.
- Crick, N. R., & Grotpeter, J. K. (1996). Children's treatment by peers: Victims of relational and overt aggression. *Developmental and Psychopathology*, 8, 367-380.

- Dale, P. S., Price, T. S., Bishop, D. V. M., & Plomin, R. (2003). Outcomes of early language delay: I. Predicting persistent and transient language difficulties at 3 and 4 years. *Journal of Speech, Language and Hearing Research, 46*, 544-560.
- Dodge, K. A. (1991). The structure and function of reactive and proactive aggression. In D. J. Pepler & K. H. Rubin (Eds.), *The development and treatment of childhood aggression* (pp. 201-218). Hillsdale, NJ: Erlbaum.
- Dodge, K. A., Pettit, G. S., McClaskey, C. L., & Brown, M. M. (1986). Social competence in children. *Monographs of the Society for Research in Child Development, 51*, 1-85.
- Eisenberg, N. (1991). Meta-analytic contributions to the literature on prosocial behavior. *Personality and Social Psychology Bulletin, 17*, 273-282.
- Eisenberg, N. (2010). Empathy-related responding: Links with self-regulation, moral judgment, and moral behavior. M. Mikulincer & P. R. Shaver (Eds.), *Prosocial motives, emotions, and behavior: The better angels of our nature* (pp. 129-148). Washington, DC: American Psychological Association.
- Eisenberg, N., Shea, C. L., Carlo, G., & Knight, G. P. (1991). Empathy-related responding and cognition: A “chicken and the egg” dilemma. In W. Kurtines & J. Gewirtz (Eds.), *Handbook of moral behavior and development* (pp. 63-88). Hillsdale, NJ: Erlbaum.
- Everitt, B. S., & Dunn, G. (1991). *Applied multivariate data analysis*. London: Edward Arnold.
- Field, A. (2009). *Discovering statistics using SPSS* (3rd ed.). London, England: Sage.
- Franzois, L. S., Davis, M. H., & Vasquez-Susson, K. A. (1994). Two social worlds: Social correlates and stability of adolescent status groups. *Journal of Personality and Social Psychology, 67*, 462-473.
- Frick, P. J., Cornell, A. H., Barry, C. T., Bodin, S. D., & Dane, H. E. (2003). Callous-unemotional traits and conduct problems in the prediction of conduct problem severity, aggression, and self-report of delinquency. *Journal of Abnormal Child Psychology, 31*, 457-470.
- Frønes, I. (1994). *De likeverdige: Om sosialisering og de jevnaldrendes betydning*. Oslo, Norway: Universitetsforlaget.
- Garcia Coll, C., Lamberty, G., Jenkins, R., McAdoo, H. P., Crnic, K., Wasik, B. H., & Vazques Garcia, H. (1996). An integrative model for the study of developmental competencies in minority children. *Child Development, 67*, 1891-1914.

- Goodman, R. (1997). The strengths and difficulties questionnaire: A research note. *Journal of Child Psychology and Psychiatry*, 38, 581-586.
- Gopnik, A., & Astington, J. W. (1988). Children's understanding of representational change and its relation to the understanding of false belief and the appearance-reality distinction. *Child Development*, 59, 26-37.
- Greve, A. (2009). *Vennskap mellom små barn i barnehagen*. Grønland, Norway: Pedagogisk forum.
- Guerra, N. G., & Huesmann, L. R. (2004). A cognitive-ecological model of aggression. *Revue Internationale de Psychologie Sociale*, 2, 177-202.
- Hartup, W. W. (2009). Critical issues and theoretical viewpoints. In K. H. Rubin, W. M. Bukowski, & B. Laursen (Eds.), *Handbook of peer interactions, relationships, and groups* (pp. 232-248). New York: The Guildford Press.
- Heckman, J. J. (1979). Sample selection bias as a specification error. *Econometrica*, 47(1), 153-161.
- Hodges, E. V. E., Malone, M. J., & Perry, D. G. (1997). Individual risk and social risk as interacting determinants of victimization in the peer group. *Developmental Psychology*, 33, 1032-1039.
- Hodges, E. V. E., Boivin, M., Vitaro, F., & Bukowski, W. M. (1999). The power of friendship: Protection against an escalating cycle of peer victimization. *Developmental Psychology*, 35, 91-101.
- Hoffman, M. L. (1984). Interaction of affect and cognition in empathy. In C. E. Izard, J. Kagan, & R. B. Zajonc (Eds.), *Emotion, cognition, and behavior* (pp. 103-131). Cambridge, England: University Press.
- Huesmann, L. R., & Guerra, N. G. (1997). Children's normative beliefs about aggression and aggressive behavior. *Journal of Personality and Social Psychology*, 72, 408-419.
- Huesmann, L. R., & Moise, J. F. (1998). Stability and continuity of aggression from early childhood to young adulthood. In D. J. Flannery & C. R. Huff (Eds.), *Youth violence: Prevention, intervention, and social policy* (pp. 73-95). Washington, DC: American Psychiatric Press.
- Humphreys, A. P., & Smith, P. K. (1987). Rough and tumble, friendship, and dominance in schoolchildren: Evidence for continuity and change with age. *Child Development*, 58(1), 201-212.
- Johansson, E. (1999). *Etik i små barns värld: Om värden och normer bland de yngsta barnen i forskolan* (Doctoral thesis, Acta Universitatis Gothoburgensis, Sweden).

- Kagan, J., & Snidman, N. (1991). Temperamental factors in human development. *American Psychologists*, 46, 856-862.
- Kochenderfer, B. J., & Ladd, G. W. (1997). Victimized children's responses to peers' aggression: Behaviors associated with reduced versus continued victimization. *Development and Psychopathology*, 9, 59-71.
- Ladd, G. W., Kochenderfer, B. J., & Coleman, C. C. (1997). Classroom peer acceptance, friendship, and victimization: Distinct relational systems that contribute uniquely to children's school adjustment? *Child Development*, 68, 1181-1197.
- LaFontana, K. M., & Cillessen, A. H. N. (2002). Children's stereotypes of popular and unpopular peers: A multimethod assessment. *Developmental Psychology*, 38, 635-647.
- Lagerspetz, K. M. J., Björkqvist, K., Peltonen, T. (1988). Is indirect aggression typical of females? Gender differences in aggressiveness in 11- to 12-year-old children. *Aggressive Behavior*, 14, 403-414.
- Little, T. D., Jones, S. M., Henrich, C. C., & Hawley, P. H. (2003). Distinguishing the "whys" from the "whats" of aggressive behavior. *International Journal of Behavioral Development*, 27, 122-133.
- Løkken, G. (2000). *Toddler peer culture: The social style of one and two year old body-subjects in everyday interactions* (Doctoral thesis, the Pedagogical Institute, NTNU, Norway).
- Melinder, A., Endestad, T., & Magnussen, S. (2006). Relations between episodic memory, suggestibility, theory of mind, and cognitive inhibition in the preschool child. *Scandinavian Journal of Psychology*, 47, 485-495.
- Michelsen, E. (2004). *Kamratsamspel på småbarnsavdelingar* (Doctoral thesis, the Pedagogical Institute, University of Stockholm, Sweden).
- Newcomb, A. F., Bukowski, W. M., & Pattee, L. (1993). Children's peer relations: A meta-analytic review of popular, rejected, neglected, controversial, and average sociometric status. *Psychological Bulletin*, 113 (1), 99-128.
- Parker, J. G., & Asher, S. R. (1993). Friendship and friendship quality in middle childhood: Links with peer group acceptance and feelings of loneliness and social dissatisfaction. *Developmental Psychology*, 29, 611-621.
- Parkhurst, J. T., & Hopmeyer, A. (1998). Sociometric popularity and peer-perceived popularity: Two distinct dimensions of peer status. *Journal of Early Adolescence*, 18, 125-144.

- Perren, S., & Alsaker, F. D. (2006). Social behavior and peer relationships of victims, bully-victims, and bullies in kindergarten. *Journal of Child Psychology and Psychiatry* 47(1), 45-57.
- Piaget (1973). *Språk och tanke hos barnet* (K. Karling, Trans.). Lund, Sweden: CWK Gleerup Bokforlag.
- Piaget (1969). *The mechanisms of perception*. London: Rutledge & Kegan Paul.
- Poulin, F., & Boivin, M. (2000). The role of proactive and reactive aggression in the formation and development of boys' friendships. *Developmental Psychology*, 36, 233-240.
- Rayna, S. (2001). The very beginnings of togetherness in shared play among young children. *International Journal of Early Years Education*, 9, 109-115.
- Rose, A. J., & Rudolph, K. D. (2006). A review of sex differences in peer relationship processes: Potential trade-offs for the emotional and behavioral development of girls and boys. *Psychological Bulletin*, 132, 98-131.
- Rose, A. J., & Swenson, L. P. (2009). Do perceived popular adolescents who aggress against others experience emotional adjustment problems themselves? *Developmental Psychology*, 45, 868-872.
- Rose, A. J., Swenson, L. P., & Waller, E. M. (2004). Overt and relational aggression and perceived popularity: Developmental differences in concurrent and prospective relations. *Developmental Psychology*, 40, 378-387.
- Rys, G. S., & Bear, G. G. (1997). Relational aggression and peer relations: Gender and developmental issues. *Merrill-Palmer Quarterly*, 43, 87-106.
- Salmivalli, C., & Nieminen, E. (2002). Proactive and reactive aggression among school bullies, victims, and bully-victims. *Aggressive Behavior*, 28, 30-44.
- Scarr, S., & McCartney, K. (1983). How people make environments: A theory of genotype environment effects. *Child development*, 54, 424-435.
- Stenberg, C. R., & Campos, J. J. (1990). The development of anger expressions in infancy. In N. L. Stein, B. Leventhal, & T. Trabasso (Eds.), *Psychological and biological approaches to emotion* (pp. 247 – 282). Hillsdale, NJ: Erlbaum.
- Underwood, B., & Moore, B. (1982). Perspective-taking and altruism. *Psychological Bulletin*, 91, 143-173.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge: Harvard University Press.

- Vaish, A., Carpenter, M., & Tomasello, M. (2009). Sympathy through affective perspective taking and its relation to prosocial behavior in toddlers. *Developmental Psychology*, 45, 534-543.
- Whaley, K., & Rubenstein, T. S. (1994). How toddlers «do» friendship: A descriptive analysis of naturally occurring friendships in a group child care settings. *Journal of Social and Personal Relationships*, 11, 383-400.
- Williams, P., Sheridan, S., Sheridan, S., & Pramling, I. (2001). *Barns samlarande: En forskningsöversikt*. Stockholm, Sweden: Skoleverket.
- Wimmer, H., & Perner, J. (1983). Belief about beliefs: Representation and constraining function of wrong beliefs in young children's understanding of deception. *Cognition*, 13, 103-128.
- Xie, H., Li, Y., Boucher, S. M., Hutchins, B. C., & Cairns, B. D. (2006). What makes a girl (or a boy) popular (or unpopular)? African American children's perceptions and developmental differences. *Developmental Psychology*, 42, 599-612.